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POPULAR COMPUTING WEEKLY

INCORPORATING

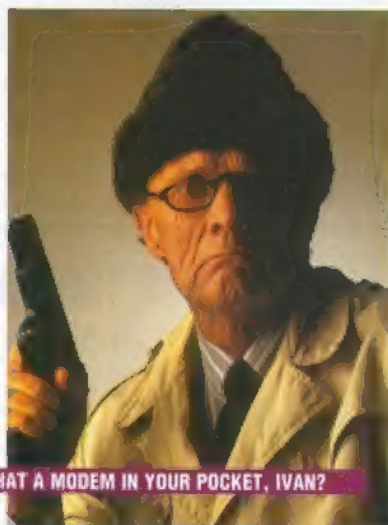
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CIA HACKS SOVIETS

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ARCHIMEDES

- Not a whole lot of launches for this machine, but this week we review Art Nouveau, a paint package from Computer Assisted Learning, p.19.



AMSTRAD

- On the Spectrum, we review the long awaited SwiftDisc, which aims to compete with the Disciple and +D interfaces.
- Never accuse us of being unseasonal: we list a program that will generate a snowflake effect on the Speccy.

COMMODORE

- C64: how to control a VCR timer to record multiple TV programmes, p.58.
- Amiga: DPaint III reviewed by a professional, p.20.
- Amiga: a new book explains 3-D graphics p.16.



ATARI

- ST: Mini-Office reviewed, plus musical Midgrid.
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Publishers get tough on pirates

A CONFERENCE of leisure software publishers has come up with several policies which could have far-reaching consequences for the entertainment software industry.

The Arena conference, held in Mallorca, covered two major areas: combating software piracy and the establishment of the Entertainment Software Publishers Association. ESPA has been set up to promote the leisure software industry and to pool the U.K. industry resources together for market research purposes.

The publishers discussed the issue of software piracy with Bob Hay, of the Federation Against Software Theft. According to Hay: "there was a very surprising and positive response from the industry." The major priority



Hay: "positive response" from publishers.

was to promote education and awareness of software piracy. Among the proposals put forward was an anti-piracy measure included at the beginning of a game in much the same way as videos carry copyright warn-

ings. If adopted this would probably develop into an industry standard.

FAST is also hoping, in conjunction with Activision and Bullfinch 1000, to produce a short one minute video message to be included in the television advertisement systems in shops such as the Virgin Megastore and W.H. Smith.

Bob Hay says that "FAST will be working very closely with ESPA, particularly as we will have a lot of members and aims in common."

ESPA also intends to publicise computer games through television and daily newspapers. Among its members are Ocean, U.S. Gold, Hewson, Virgin Mastertronic and Mirrorsoft. Andrew Hewson was elected interim chairman.

Dynamics gets a grip on it

THE JOYSTICK manufacturer Dynamics Marketing has released two new products: the Competition Pro PC joystick and the A-D Games Card.

The Competition Pro PC is a two-tone grey coloured joystick based on the Competition Pro 5000 and is suitable for use with the Atari, ST, Amiga, Amstrad and C64 computers. It costs £15.95.



Best 'em cowboy.

The A-D Games Card is a printed circuit card designed to interface digital joysticks with PCs. It features twin plugs for two joystick operation and features a slow-motion action facility. It retails at £24.95.

A bundle of the Competition Pro PC joystick, the A-D Games Card and four computer games - Wizzball, Tai-Pan, Victory Road and Baseball - retails at £49.95. All prices are inclusive of VAT.

For further details telephone 061 626 7222.

New console shock

POPULAR COMPUTING WEEKLY has seen a new games console from a U.K. company which is set to be released as competition to the Konix Multi-system.

The console will come with various add-ons which "will knock the socks off" the Konix system and any other games console on the market according to Bjorn Lia, managing director of EKAF Systems Ltd, which developed the hardware for the console.

Sources say that representatives of software houses which have seen the prototype are "very, very impressed." One software developer told us that the PARC console "is the best hope for the future."

According to Mr Fiba the managing director of PARC, the U.K. company which will be producing the console, the PARC Maestro kit will come "complete with hydraulic chair, control yoke, combat helmet, laser gun, 3D fighter goggles, ejector seat and

cassette quality sound."

By the time of its release there will be over 50 games to choose from including *Ninja Bonsai Simulator*, *Skoda Rallycross*, *Frank Bruno Knocked Out*, *Robin Reliant Racer*, *Latin American Death Squad*, *Smokers Cough* and *Papal Election Adventure*. The games software will run on a revolutionary 7in. disc format which has been specifically developed to keep costs to a minimum. The Maestro kit is priced at a very reasonable £50. Lia explains that the pricing is so low because the company expects to sell well over 5,000,000 units in the first year.

A special music bundle, the PARC Boppy kit, comes with a 1-track Rolf Harris Stylophone Sequencer and five air miles to the end of a runway of your choice. An executive version of the PARC system comes with a free air stewardess and costs £350. It is expected to ship from April 1.

Around the World by keyboard

A NEW product promises to give PC users the world at its fingertips. PC Globe+ is a graphics-based statistics and geographical information package

using statistical information from the CIA, the World Bank and the United Nations.

The program contains maps, statistics on population, age distribution, health statistics, telephone codes and tourist attractions. Facilities include automatic currency conversion and point-to-point distances.

PC Globe+ requires two floppy drives or a hard disc to run and costs £69.95. For more information, telephone 01-436 5536.

IN BRIEF

Vacuum cleaner talks back

THE HOOVER company has introduced a talking vacuum cleaner which uses computer technology to speak to its owner, according to *Newsbytes*. The appliance can let the user know when it needs attention for any of its functions - in French, German, Italian or English. The Sensotronic Audio cleaner can give four messages in a female voice and is available in Europe for about £250.

First AIDS program

A SMALL FIRM in Singapore has developed the first automatic AIDS testing system. The robot analysis system, known as Robot TL-1, can handle the automatic analysis of biological samples to test for the AIDS virus, reducing the risk of contamination by laboratory staff, improving the consistency of results and speeding the process.

Write on

IBM RESEARCHERS are exploring the possibility of a new interface for computers which would allow people to write on a flat surface in the same way as with a paper and pen. The Paperlike Interface would be more convenient and natural for users than a keyboard or mouse.

The IBM experimental display system displays the writing on a special monitor. Handwriting recognition software translates the writing and other marks into computer commands.

Traffic jam blues

TWO COMPANIES in Australia lost the chance to bid for a £30 million tender because they were four minutes late handing in their bids. The reason - they were held up in a traffic jam. The bid is believed to have cost Hewlett-Packard and Australian Telecom about £250,000 to produce, so it was a very expensive traffic jam for the two companies.

CIA hacks Soviets

AS classified secrets and military command systems become computerised the CIA and the KGB have cottoned on to new weapons in their clandestine wars - computer hacking and viruses.

According to a retired senior military computer security expert quoted in *Time* magazine: "The potential for offensive use of viruses is so great that I would have to view the power and magnitude as comparable with that of nuclear or chemical weapons."

the KGB have also penetrated Western systems. The case of the alleged West German hacker spies has been widely reported although it is interesting to note that estimates of the damage done have been consistently revised downwards.

The CIA and NSA have also been looking at the use of computer viruses as a means of sabotaging Military Command systems. A virus could be planted in a Military Command and

of CIA success in sabotaging Soviet computer installations with viruses. He pointed out that Soviet computers are not networked to the same extent as in the U.S. because the country's communications are not as advanced. Any damage would be localised and would not spread to the same degree as in the Western world.

He added that "it does not have to be command and control systems which are affected. With the growing reliance on 'fly-by-wire' systems in the military airforce - systems which rely on computers to keep the aeroplanes in the air because the surfaces are kept unstable - a virus in the flight control system could destroy the aircraft because the pilot cannot fly it unaided. The Airbus A320 is the first commercial aircraft with a fly-by-wire system."

The Ministry of Defence told *Popular Computing Weekly* that "a range of measures are taken to protect secret MOD information from unauthorised computer access but the methods cannot be revealed. Security is reviewed constantly."

● Emma Nicholson, MP for West Devon and a former computer operator at ICL, has compiled a dossier containing evidence from banks, police forces, the British Computer Society and computer mainframe manufacturers which she will present to the Prime Minister.

Stephen Castell, an information technology consultant, has rejected firmly the idea of outlawing computer

Continued on p7 ►



Forget the rough stuff 007 it's time to get hacking!

In 1981 the National Security Agency in Washington found that someone had broken into an intelligence facility by gaining access through a secure telecommunications cable and stolen a large amount of classified information. NSA officials believe the breach was the work of a spy. Since that time there have been other instances of computer spying by intelligence services from both sides of the Iron Curtain.

The CIA and the NSA have gained access to classified military systems in the Soviet Union and it is thought that

Control System - which supplies information and co-ordinates military movements - that could be triggered in the event of a war. The virus could either erase everything in the system or slow down the response time making it virtually useless. An example of this in the civilian field is the "IBM Christmas Tree" virus which drastically slowed down whole IBM networks and left screens filled with Christmas tree graphics and a message which read "Happy Christmas from IBM".

An expert in the U.K. was sceptical

Forger rumbled by Gremlin Graphics

A COMPUTER PLAYER hit on a novel way to get his hands on leisure software. M. E. Pryke of Sudbury, Suffolk wrote to the *East Anglian Daily Times* offering his services as a freelance reviewer of computer software claiming to have several years' experience.

The paper replied asking for a sample of his work. Pryke sent a sample review and the newspaper wrote to say it was not interested but that it would keep his name on file.

Pryke took the original letter, covered the text and made a photocopy. He wrote a letter on the headed paper pretending to be the editor saying that Pryke's reviews were to be published in the newspaper and that other reviews would be published at a later date.

Pryke forged the editor's signature



Exposed: Pryke's forged letter from a newspaper editor.

and sent a copy of the letter, together with a covering letter from himself, to almost every software house in the U.K.

Pryke ended the letter by saying: "Please contact me direct at the above address (his home address) as I work

freelance and I cannot be responsible for products addressed to any other person."

The deception was discovered by accident when representatives of several software houses who knew Paul Nixon, the newspaper's software reviewer, including Richard Barclay of Gremlin, telephoned to find whether he was leaving. A quick check with the reference number at the top of the letter revealed it to be a forgery.

With Barclay's assistance, Nixon contacted as many software houses as possible alerting them to the forged letter.

Pryke's actions may have been illegal because he could have been guilty of "obtaining pecuniary advantage by criminal deception." The *East Anglian Daily Times* has sent a warning letter to Pryke about the affair.

This Week

LETTERS p.9

Why aren't software shops as cheap as mail order outfits?
And what about the Atari 8-bit? Plus an erogenous moan...

HOTLINES p.11

News on *Run the Gauntlet* plus what will be released at the Euro trade show in April. Plus the latest full price chart from Gallup!

SPECTRUM SWIFTDISC p.13

John Wase reviews the latest disc interface and drives for the Sinclair Spectrum.

3-D AMIGA p.16

A new book due out soon explains how to program 3-D graphics.

ARCHIE NOUVEAU p.19

A new Archimedes art package gets the once over from Martyn Lovell.

D PAINT III p.20

Alan Tomkins is already using the latest package from EA in his games designs.

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A new way of composing electronic music on an ST is examined.

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Mal is disturbed by censorship moves.

KENN GARROCH, p.58

C-64 and ST problems this week.

FEEDBACK

John De Rivaz on the data protection racket.

Number two quits U.S. Gold as Rainbow Arts pulls out

TIM CHANEY, operations director and second-in-command at U.S. Gold has quit the company. He was responsible for overseeing all company operations, sales and marketing of the company's products and coin-op licensing.

Chaney has been with the company for four years and is leaving to build his own company specialising in consultancy/agency contracts for U.S. and Japanese software publishers and hardware agencies. "There is a wind of change within the marketplace and being an independent entity with a proven track record could be the most lucrative vantage point at this stage of my career," said Chaney. He will not be replaced at Gold.

Compared to its usual standards U.S. Gold had a disappointing Christmas. It failed to dominate the charts with its big (and expensive) Christmas

coin-op, *Thunderblade*. In addition, developers Rainbow Arts and U.S. Gold have parted company after a partnership which lasted just over a year. U.S. Gold gives no particular reason for the split beyond saying that it is time it moved on to more lucrative deals.

Two Rainbow Arts games involved U.S. Gold in legal arguments, *Great Giana Sisters* and *Katakis*. The latter was withdrawn after threats of legal



Katakis: too much like R-Type but successfully revived in the Demam's version.

action from Activision because of its alleged similarity to *R-Type*. Ironically, the reaction of dealers to *Demaris*, which is the version of *Katakis* approved for release by Activision, "has been very encouraging" according to a U.S. Gold source.

Jürgen Goedner, managing director of Soft Gold, which owns Rainbow Arts, gave *Popular Computing* his reason for the split: "Sales have not been as high as we expected. U.S. Gold has a very tight release schedule for its own products which has meant that some of our products have not been released until much later than their West German release dates. With a computer such as the Amiga a period of time such as six or eight months can make a lot of difference to the quality of a game. As for the *Great Giana Sisters* and *Katakis* in the U.K. all I can say is that we had no problems



Tim Chaney: feeling the "wind of change".

in Germany. The split was purely business. We are still the exclusive distributors of U.S. Gold products in the German speaking countries." A spokesman for U.S. Gold had "no comment" to make on the future of its distribution deal with Rainbow Arts in Germany.

Elsewhere in the industry, Electronic Arts and Martech have split up. The contract between the companies had come to an end and both decided to go their own ways. Martech is now looking for another distributor.

Recipes cooked up by computer

PC OWNERS who fancy their chances as great chefs will soon be able to use their computers to help them in the kitchen.

Bon Appetit can help the user produce a tasty meal from the contents of his fridge. He inputs details of the available ingredients into a computer and a list of recipes based on the ingredients will appear. The program adjusts quantities automatically for the number of guests and gives cooking instructions.

The program is also an electronic cookbook with a database of hundreds of recipes. They can be accessed by name, course or by keying-in ingredients. *Bon Appetit* prints-out recipes, prepares and prints shopping lists and offers tips to save time and improve cooking techniques.

Bon Appetit is supplied with a bonus disc containing more than 200 recipes from the leading food magazine in the U.S. of the same name. The software is available for the PC only and retails for £39.95 inclusive.

For further details contact Software Circus on 01-436 2811.

APPLE COMPUTER has won the first round of its year-old copyright court battle against Microsoft but the initial scope of the victory has since been limited by the judge.

The court case concerns a 1985 licensing agreement with Apple which allowed Microsoft to develop the first version of *Windows*. Apple alleged that Microsoft and Hewlett-Packard, whose *New Wave* product incorporates aspects of *Windows*, violated copyrights held in the audio-video interface of Macintosh computers.

San Francisco Federal Judge Schwarzer ruled originally that *Windows 2.03* exceeded the limits of the 1985 agreement. He has since limited the scope of his judgment by ruling that although Microsoft cannot use the licence agreement as a "complete defence" against Apple claims that Microsoft *Windows 2.03* operating system infringes its copyrights, the agreement allows Microsoft to use visual displays which were the subject of the accord "in current and future software products."

If Apple wins the next stage of the case, which is expected to begin on April 14, both *Windows* and *New Wave* may have to be changed. That would be an expensive process for both companies. Further complications arise with the fact that *Win-*

Apple out to break Microsoft windows

dows is the foundation of a new program called *Presentation Manager* which is at the heart of the latest generation of IBM products.

Microsoft's U.K. managing director David Svendsen told *Popular Computing Weekly*: "This is the first of many battles and we are very very confident about our case."

Al Eisenstat, Apple chief financial officer, commented on the judge's

original ruling: "We are pleased by the ruling as it validates the Apple contention that *Windows 2.03* exceeded our 1985 agreement with Microsoft. We look forward to resolution of the remaining issues in the case."

As for the implications for the IBM *Presentation Manager*, a spokesman for Apple said that the lawsuit did not name IBM and therefore the company would not be involved.



Apple claims that Microsoft's *Windows 2.03* breaches copyright of the Macintosh window environment.

RED HEAT

The heat is on ... and the chase is in full cry as East and West join forces to hunt down a Soviet drug-dealer. The two detectives - one Russian, one from Chicago - both have different reasons for capturing their prey as they come face to face with the 'Cleanheads' gang, fist fights, gun fire, and

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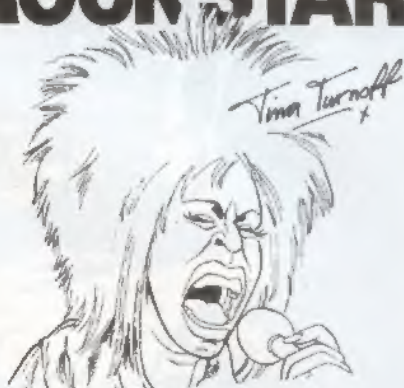
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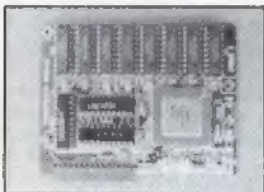


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Chips 'n' lasers: ozone killers



Circuit boards: CFC solvents.

IT SEEMS everyone is going green nowadays. The latest group to join the ranks of the environmentally-conscious are three computer manufacturers - Matsushita, NEC and Epson - according to *Newbytes*.

Chlorofluorocarbons which have caused serious damage to the ozone layer are used in the computer industry to clean computer chips. Following the international conference on the ozone layer in London which urged a 50 percent reduction in production of CFCs before the year 2000, the three computer manufacturers have pledged to stop using CFCs by the end of the century.

The problem of CFC use in the computer and electronics industry is increased by the employment of CFC 113-based solvents in the cleaning of conventional printed circuit boards.

The U.S. electronics company, AT&T has developed a bio-degradable solvent which could replace CFC-based products. Hitachi has announced plans to terminate its use of CFC 113 and IBM intends to have achieved a 50 percent reduction by 1992.

ICI provides many of the solvents used in cleaning circuit boards. The company's technical marketing manager, Dr Whim, told *Popular Computing Weekly*: "CFC 113 is used to remove flux and other contamination from fully-assembled conventional

printed circuit boards for computers to make them work more effectively. It is ideally-suited to this cleaning process.

"For some parts of the electronics industry there are alternative ways now. Some can minimise the use of CFC by changing to special grades with lower emissions, such as Amaklone EXT or solvents which are not CFC-based such as Propaklone."

"Unfortunately there are no slot-in replacements for CFC 113, so we cannot give a timescale. We cannot leave our customers in the lurch. The EEC has said that CFCs should be phased out by the 2000 and we will be working to that."

● Siemens ND2 and ND3 high-speed laser printers give off CFC 113 during a process known as cold fusion which seals the toner to the paper. Siemens was the first company to use the cold fusion process and is the only company using it still. Most companies use the Zenon lamp fusion method which seals the toner to the paper without using any gas. Siemens is developing a new printer which will not use CFCs. Apparently the machines have been re-badged by several other companies, including Storage Technology and Unisys.



Silicon chips: CFC solvents.

Another Codemasters first!



CODEMASTERS has yet another first to add to its many accolades and triumphs - the first successful head transplant in the world has been performed in the specialist Codemasters Brain Clinic.

Dr Emma Kozwinski who headed the team of internationally-renowned brain surgeons was "over the moon" at the result of the operations. "I doubt if

even Mary Shelley could have come up with anything as amazing as this," she exclaimed.

None of the four patients was available for comment at the time of going to press but all were said to be "comfortable". Sources said that they should be up and about by April 1. *Popular Computing Weekly* wishes them all a speedy recovery.

CIA HACKS SOVIETS

◀ Continued from page 3

hacking. He argues that legislation against computer hacking would be virtually impossible to draft. The definition of unauthorised access would be extremely problematical and the speed of technological change would mean that any technical terms included in the draft legislation would be out of date very quickly. This would

either make the legislation unworkable or cause unnecessary confusion. Alistair Kelman, a specialist in computer law is also against legislation. At a recent conference he stated that making hacking a criminal offence would only drive it underground. He added that hackers are often used by companies to test the security of dial-up services and that the police also receive information about criminal activities from hackers.

POPULAR COMMENT

The establishment of the Entertainment Software Publishers Association can only mean good news for the industry. It is gratifying to see individual software houses joining together to tackle certain problems, such as software piracy and to improve the promotion of the industry and its products.

Software piracy costs the industry millions of pounds; money which could be spent on product development. It is not only software houses that suffer, ultimately it is the consumer who is harmed by piracy. It is up to the industry to make sure, however, that ESPA does not become a forum devoted to the interests of the publisher above the needs of the consumer.

Popular Computing Weekly has consistently tried, wherever possible, to bring to light the murkier doings of the computer world. Any technology is open to abuse and the world of computers is no exception. Hacking and viruses have developed from "harmless" civilian pursuits - or hobbies - into weapons of espionage and sabotage. We should not be surprised that this is so. After all even the relatively harmless world of computer games has shown itself to be open to abuse from racists and pornographers. This is not a reflection on the industry itself but on the resourcefulness of the baser elements of humankind.

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STAR LETTER

Where's the bulk?

I often buy games via mail order companies for my Atari ST. The only reason I do so is because they are £5 to £10 cheaper than shop prices. I understand that they are cheaper because the games are ordered in bulk but what I do not understand is why cannot shops do this? Mail ordering can be frustrating, as sometimes one may have to wait months before receiving the game. Buying games from shops is much better – apart from the price. I ordered my computer from a mail order company and after three very frustrating months – and many letters and telephone calls – eventually I received it.

Can you tell me why I found *Computer Gamesweek* in the



middle of your magazine? I hope you will continue with it as I am sure many people like the idea of two magazines for the price of one.

Dominic Melville,
Penarth.

Mail order companies can sell software at generally lower prices because they have very low overheads – like not having to pay rates for a shop. As for *Computer Gamesweek* it is here to stay? making *Popular Computing Weekly* by far the best value-for-money computer weekly.

8-Bit debate

I read with interest and surprise the comment by Ewan Dalton, in *Feedback* in *Popular Computing*, 23 February 1989.

I agree with a lot of his comments but am amazed by his lack of knowledge regarding 8-Bit Atari computers, especially the 65XE.

The 8-Bit Atari have been around for a long time, and there is no doubt that the Atari is the finest 8-Bit computer ever made for sound, graphics, ease of programming, all the documenta-

tion anyone could ever wish for and a help and back-up service second to none.

In fact, no other 8-Bit computer has sold 100,000 units over the Christmas period alone. It is the third most popular after the Spectrum and Commodore and beats both of them hands down and is not overpriced as most other computers are either.

An XL12 cassette player can be purchased for £12 brand new, post-paid. I have over 70 of the hundreds of cartridges available and have recently received a catalogue of over 15 thousand games on cartridge, tape, disk etc from Silica Shop. I don't wish to crow, but the Atari 8-Bit will be going strong, when all the other 8-Bit Computers are dead and buried. Dalton is wrong to state or imply that there is 'a better' 8-Bit machine.

Ron James,
Preston.

Erogenous moan

The lead article of your March 16 issue about 'On-Line Porn' contains major inaccuracies which I feel you should look into, and correct in your next issue.

This article is accompanied by two screenshots taken from MicroView. Part of the article suggests that MicroView's adult Closed User Group known as the "Erogenous Zone" provides animated digitised pictures of oral sex, pornographic stories, adventure games and sexual contact advertisements. It also suggests that MicroView make no attempt to find out the age of the user before they are allowed access to the area containing adult material.

MicroView wishes to point out the following:

1) MicroView was distressed to see adult material reproduced in a magazine targeted at the young computer games enthusiasts. MicroView questions the morals of people who publish words and phrases such as "oral sex" and "nympho" in a magazine commonly read by nine year old children.

2) The screenshots were published without the knowledge or permission of MicroView. Publishing such screenshots infringes our copyright, and goes

against all accepted practices.

3) MicroView's host software is not capable of supporting animated digitised pictures, or adventure games.

4) All MicroView users have to register before access to any part of the system is allowed. A questionnaire has to be completed which includes a request for the user's age. Thus the age of each user is known before access is allowed to ANY part of the system.

5) The main part of MicroView consists of topical chatlines about radio, music, and jokes, and is supported by a features

area with items such as horoscopes and trivia. A separate closed area contains the adult material. Users are locked out of this area until a written request to join the club is received.

6) Once a written request is received, a thorough check of the user is made before allowing them access to the adult area. This includes cross referencing their declared age to ensure that they are over 18. MicroView neither encourages nor permits minors to enter its adult area.

7) To obtain the material for their article, your staff joined the adult club known as the Erogenous Zone in the correct manner by sending a £10 cheque and a signed written request.

8) In the course of their "investigation" they composed and sent highly erotic material to a female user.

9) MicroView requests that *Popular Computing Weekly* print an apology for misleading remarks made about the admission of minors into its adult area, which have been made without any foundation, and have brought MicroView into disrepute.

Chris Rollings,
Sysop, MicroView,
London E17.

Some simple facts:

• At no time were our investigating staff asked for

proof of their age. That is the whole point of the article as it affects you – why were we not verified? What does "cross-referencing their declared age" mean? If you mean asking the sysops of other boards, that sounds wholly unreliable.

• We have been publishing bulletin board screenshots for a very long time. You are the first to object on the grounds of "copyright". According to barrister and computer lawyer Alistair Kelman, the 1985 amendment to the copyright act, which hauled in computer software, protects the program code, but not explicitly the screen layouts.

• We did not say MicroView supported animated pictures or porn pictures of any kind. That is a connection you have made owing, presumably, to the proximity of two sentences.

• The vast majority of our readers are aged between 13 and 24 years. The words used in our report are no stronger than those appearing in any daily paper.

• When "Randy Mandy" came up on the chatline requesting people to drop her a line, our staff jokingly obliged. This is beside the point – our reporters are over 18!





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HOTLINES

Forget the house music and get into Hubbard music. I confess it is a bad joke but who cares. Master of sonics Rob Hubbard is the person responsible for the atmospheric dirge at the beginning of *Populous*, a game of godhood from Electronic Arts.

Sales Curve, the people behind the forthcoming *Silk-worm* and *Gemini Wing*, are producing the Sega smash *Shinobi* for Virgin Master- tronic. The game will be

available on all major formats later this year.

This *Gauntlet* has more to do with the television children's series than Dirty Harry, although the way children behave it may be a little difficult to tell the difference. Speed is the name of the game, as four teams compete over three types of terrain - water, off road and the assault course.

Each section has a choice of four vehicles, of which one will be selected for the race at random by the program. On the water the four types of vehicle are hovercraft, speedboat, jet ski and inflatables. For the land section

there are two sizes of buggy, a four-wheel bike and the six-wheel amphibious all-terrain vehicle. The final section is the assault course, which takes place on foot over slippery logs, water holes and explosions.

Points are awarded for each section depending on your finishing position. The overall winner will be presented with the *Run the Gauntlet* trophy.

The undefeated hero of the streets is back in *Renegade III*. This time his rather downtrodden girl friend has been captured by being from the future. To complicate matters further our hero has been thrown back in time, where his only hope of a heroic rescue is to battle his way through the prehistoric, Egyptian and Mediaeval time zones. Run the *Gauntlet* and *Renegade III* are due for release later this year from Ocean.

Next month the European Computer Trade Show will be exhibiting almost 100 new products, showing what will be hot on your micro this year. Unfortunately I can do little but whet your appetites, for this is a trade show and there is no general admission.

On the gaming side, Infogrames will be displaying *Tintin on the Moon*, *Temples of the Flying Saucers* and *Quest for the Time Bird*. From Activision there will be *Timescanner*, *The Real Ghostbusters* and *Millennium 2.2*. Navy Moves and Aspar *Grand Prix* from Microdigital, *Bio-Challenge* from Palace, to name a few.

For the Amiga-owning artists there will be *Deluxe Paint III* from Electronic Arts and *Design 3D: Video Generic Master and Video Wipe Master* from HB Marketing.

On a more serious note are *Tempus 2*, Highsoft Forth, *KalfeST*, *Cartoon Tilting Design* and *3D Fonts I & II* for the ST from Highsoft and for the PC, the German company DMV will be displaying *Hyperkey Plus*, *FontEdit PC*, *Fractal Generator 3D*, *Ergo*, *Context PC* and *Infaware*.

Eight-bit owners need not worry, as programs for the Amstrad CPC, Spectrum and C64 will also be on display.

Adrian Pumphrey



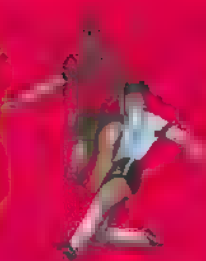
GAMESCAN

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2	Dragon Ninja Ocean	5
3	Wee Le Mans Imagine	
4	Emlyn Hughes International Soccer Audiogenic	4
5	In Crowd Ocean	
6	Operation Wolf Ocean	3
7	Fan School 2 Oribon	
8	Falcon Mirrorsoft	8
9	Pac-Land Grand Slam	
10	Batman Ocean	12
11	After Burner Activision	
12	Denaris U.S. Gold	NE
13	Thunder Blade U.S. Gold	
14	Double Dragon Melbourne House	10
15	Giants U.S. Gold	
16	War In Middle Melbourne House	19
17	Barbarian 2 Palace	
18	Last Ninja 2 System 3	RE
19	Ballistik Parlapse	
20	TV Sports Football Mirrorsoft	RE

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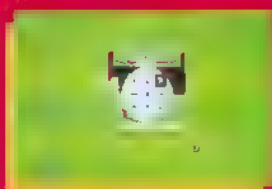
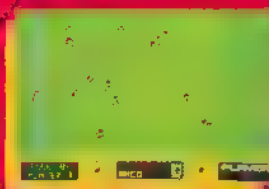
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Because early heavy disc drives stored only 40K – 100K if you were lucky – on fragile 8in. discs, Clive Sinclair became obsessed with the idea of light, portable storage systems using pocketable cartridges. Unfortunately, he did not anticipate rapid parallel developments in disc technology, leading to small, high-capacity discs, and no standard disc interface was built into his Spectrum computer.

Many third-party disc systems were devised; most have bitten the dust. The Opus Discovery, now obsolete, has an active user group and is still around in large numbers. Disciple/+D systems by Miles Gordon are currently available and, more recently, I received a review kit of a third contender, the Sixword Swift Disc interface.

The initial batch of Swift interfaces in plastic boxes looked surprisingly like interface 1, with the trade mark machined off. Efforts by Swift to buy the moulds failed;



The Swift Disc II interface and disc drive on a +2.

A swifter Spectrum

they went as aluminium scrap. Consequently advantage was taken of a total re-design to introduce a number of new features.

This issue – I had version 4.1B – is in a black upright plastic box – figure one – finished with company name and logo, a knob on top and a through port, rather like a Multiface or a Kempston interface, but some 30 percent bigger. Although a snug fit on an old rubber-key 48K, a plus or 128, it wobbled rather more on a +2. Velcro pads thoughtfully were included but users like me would have needed several pairs to enable swapping of their Spectrum families. To the left were the disc ribbon cable and optional Centronics printer port plugs – not very positive, a notched shroud would have helped; to the right, a Kempston joystick port.

Driven nuts

The interface will take two drives and supports a range of commands from Basic with a separate batch "from the button". That is where I first came unstuck; I connected a drive unit, opened the handbook – A5, 32 pages photocopied carefully from a good laser printer original with a pale-blue card cover – and tried to format a disc; it would not format – none of mine would. Frantic calls to Sixword produced one of its drives, which did.

Kenn Garroch's article on drives a few weeks ago set out the basic principles. On

John Wase
reviews a
newcomer to the
Disciple/+D
market, the Swift
Disc Interface from
Sixword.

activation, a drive mechanism needs time to attain speed before information is fed to it. The read-write head takes time to lower and rise and it takes time to get from track to track – the stepping rate. This indicates some of the pitfalls: older drives often have too slow a stepping rate – the Swift interface demands six milliseconds maximum.

Although my 3.5in. Mitsubishi was within this specification it had no head stop on the mechanism; the head retracted past track zero and re-location was a problem with the Swift; the 5.25in. drives were just too slow. One promptly failed in resentment. A new replacement three-millisecond step TEAC from Pinboard worked perfectly, although Sixword said it never succeeded with 5.25in. The Mitsubishi, configured as drive 2, even stopped the Swift drive – drive 1 – working when they both fed a common connector. The Discovery and +D both worked satisfactorily with all drives; check

yours with a loan Swift before purchase.

Various 80-track double-sided units tested the Swift performance against Discovery and +D using the program in figure two. This measures transfer rate rather than random drive operations, so a clean formatted disc was loaded/saved sequentially with large portions of code. Snag two – the formatted capacity of Swift discs is lower than the Discovery (718K) or +D (780K) – 632K (default 32 headers) or 619K (80 headers maximum). Having obtained all my timings for the latter first, I had to adjust my program and start again.

The results – figure three – show clearly that, for saving, the Swift was swiftest by a small but significant head. It took the same timings to load, whereas here the +D was decidedly faster. The older Discovery ground on at Microdrive speed, about six times longer. So the Swift is pretty swift.

Pressing the black button on the interface freezes the program and permits all kinds of things. You can save "image" files of the contents of memory – 128K mode is detected automatically and screens can be swapped with the "break" key; load/erase/write protect/unprotect files, format/catalogue discs, copy/rename files, back-up discs and alter address contents – i.e., do Multiface pokes. In this respect it does rather more than the +D but, on the other hand, it will not dump screens. The only

Continues over ►

◀ Continued from page 13

obvious bug was with twin discs. Copy works from disc 0 to disc 1 but not disc 1 to disc 0, and the copy routine leaves the screen corrupted and the Spectrum locked.

From Basic, keywords are suffixed with a "%" character, e.g., LOAD%. So you can load/save/erase/merge files, cat/format discs. Syntax for open/close is modified to evade the fatal Sinclair ROM bug. File handling is much more comprehensive than the +D. Sequential files - operated on with print#, input# and inkey# are available for data input and output and, in addition, can be opened to append information; eof is available as an end of file marker.

In addition, in% and out% are used for fixed-length records allowing true random access. Other features include %err and %line which allow you to trap errors, print the offending line number and retry, %lower to turn off interface case conversion and %date to set the interface date recorded in the catalogue of each file.

Co-author John Cousins told me that compared to the original version, the latest is no longer confined to an RS232 port and a Kempston joystick. You can disable the joystick from software and you can have a Centronics port if you wish, though curiously, you still have to format it with a baud rate. This is all very well but at a slightly higher price - printer port extra although cable is included - compared to the volume sales +D, what is the inducement to buy?

The answer is in another purchasable item, the Microdrive emulator. It is in a big box - a little disc with a 14-page A5 handbook. On the disc are three files, "run", "emul" and "copy". Get a pile of blank formatted discs, load "emul", then try the familiar Microdrive syntax. You can format up to four pseudo-cartridges on a disc.

The principal difference between emulator operations and true Microdrive operations is the speed at which it all happens; formatting a cartridge is almost instantaneous. That is achieved because the combination of emulator and hardware supports all hook codes and large portions of the ROM of interface 1, version 1. This even allows many of the early programs

```

1 REM TEST PROGRAM FOR DISC
  DRIVES
2 REM TO TEST LOADING CHANGE
  SAVE TO LOAD IN LINE 20 OR 22
10 CLEAR 24999
15 FOR A=1 TO 15
19 REM SWIFT
20 SAVE X0:CHR$(64+A):CODE 250
  00,44535
21 REM +D/Discovery
22 REM SAVE "A":CHR$(64+A)
  CODE 25000,44535
23 PRINT CHR$(64+A)
30 NEXT A

```

Timing test routine.

which had a nasty habit of jumping straight into the ROM to work.

Hanging loose

The interface 1 network is not fully supported; instead, one of the network hook codes is assigned to put the Sixword interface in "transparent mode". The "copy" program takes advantage of this feature to activate interface 1 - which must be fitted directly into the Spectrum with the Swift interface behind - and allows it to reel the contents of its Microdrives straight onto the disc.

A colleague and I watched, fascinated, as the whole of *The Writer* went on to pseudo-cartridge, all 24 files, at an unbelievable speed. So did *Tasword 3*, *Omnicalc* and *The Artist*. This, of course, is why even the Centronics interface must be formatted with a baud-rate; it is an emulated interface 1 RS232 with subsequent Centronics conversion.

Veterans will remember that the Sinclair "run" command was used to auto-run a cartridge, provided that it was in drive 1. The emulator names the pseudo-cartridge Microdrive 1, 2, 3 and 4, so each disc can have only one auto-running program on it. Like many people, I dislike my precious programs running on discs which are also keeping day-to-day files and clearly Sixword has thought about this, too, and provides instructions to circumvent the problem by renaming pseudo-cartridges. Care is still necessary, for the emulator recognises only the original pseudo-cartridge names.

How did it work? The software part was very good. The only snags we could find - I called in a long-term Microdrive addict for assistance - were the printing routines.

This issue has the RS232 port emulated in an identical way to interface 1, so that any programs doing direct printing should work without problems, even with direct port instructions. *Tasword 3* always prefaced its initial outpourings with a row of five italic lower-case os. After that, all was well. *Omnicalc* prefaced every print with five os and *The Writer* printed endless lines of italic os, without stopping.

The two Sixword authors operate a helpline but only between 6 and 7pm on weekdays. This was very frustrating at first until I found that the line is usually much less busy if one telephones promptly at 6pm. This is likely to be difficult for some users and a point to be considered when buying. Using the line, I contacted co-author Cousins, who explained that the Centronics port was relatively new and although it even had to be formatted with a baud rate, there were still problems with programs which did their own thing and had their own code for driving the printer interface, rather than the hook codes which Sinclair documented.

Unfortunately you cannot make a Centronics port exactly like an RS232; the solution is to use the RS232 card which is exactly compatible, together with a serial printer. If your printer is parallel, use a converter. Emulation will then be exact. The authors are aware that *The Writer* has its own code, which explains some of the problems.

The complete package arrives as an interface with Centronics and joystick ports and 3.5in. drive for £153 plus £7 carriage, much the same as the MGT +D interface. It works well, the speed is comparable, but the disc capacity of the Sixword is less and the technical support poorer.

On the positive side, the implementation of open-type files is better, random access is available and, for an extra fee, you can have Microdrive emulation (£12). That could be a great advantage if you have many beloved Microdrive programs, for although most of them are now in +D versions, too, they all cost money.

Sixword Ltd., 24 Chatsworth Close, Fareham, Hampshire PO15 5LS. Tel: 0243 771689.

Comparisons of load and save times for various interfaces.

Disc interface	Discovery		+D		Swift	
	Load	Save	Load	Save	Load	Save
5.25" Opus (Mitsubishi?) drive	417	425	51	87	-	-
5.25" TEAC drive	-	-	51	87	85	85
3.5" Mitsubishi drive	415	416	51	90	-	-
3.5" Swift (Panasonic?) drive	-	-	51	89	83	83

All timings in seconds. * = would not work, - = not tested.

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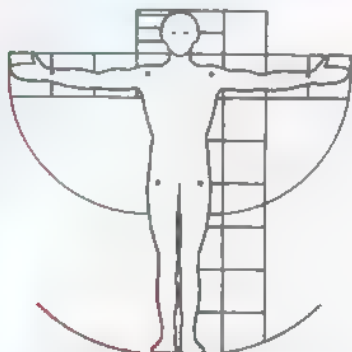
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Scene from TRON modelled on the Amiga.

3D THINKING



Most books on 3D graphics concentrate on wireframe drawings, rotations and perspective. As anyone who has seen any of the more advanced computer images will know, there is obviously more to it than that. The subject of computer rendering or ray-tracing is sparsely documented, probably because it is not a simple subject.

Amiga 3D Graphic Programming in Basic gives the low-down on all of these subjects and develops the ideas into programs which

can produce the image you see on this page. There are three basic ways of producing 3D images on a computer. The first produces wireframe drawings without all the lines which cannot be seen - hidden line wireframes. The second fills in the surfaces produced by the wireframes, giving fairly flat renditions of the object - many modern flight simulators use this hidden surface removal method.

The best method of producing 3D images is ray-tracing. It takes into account the

texture of the surface being coloured, the position of the light source and any reflections and shadows. The realism of the images created with this method means that they take a long time to produce when compared to other 3D methods. Each ray of light must be traced from its source and all the reflections, absorptions and scatter worked out to give the final picture.

The programs to perform all of the hard work are long and, when run under Amiga-Basic, are amazingly slow. The book advises

compiling them - A/CBasic compiler, or HiSoftbasic and so on - to save typing Abacus provides the source files and the compiled versions of the ray-tracer and object editor on a disc. If you are considering using any of the programs in the book, it is well worth obtaining this disc, since it allows you to get started immediately. There are also a few pre-defined pictures supplied, the rocket ship and the crown being a sample.

Point plotter

The bulk of the 358 pages is devoted to program listings for the main ray-tracer program, a shape editor and a machine code high-speed point plotter. To some extent, the book is very technical and I should think most people will have to put in a reasonable amount of work to get to grips with the vector maths involved.

Fortunately there is a chapter devoted to this subject which explains things well. The introduction tries to put the non-mathematical reader at ease by saying that basic maths skills are all which is needed to understand what is happening. Perhaps, but I think it wise to read through explanatory chapter first. The book tends to dive in at the deep end.

If you obtain the book and the disc, or type-in all the programs - they are sectioned to make them easier to use - you will be able to use them without needing to understand a great deal. The pre-compiled disc programs had a few bugs but I presume that they will be fixed in the final version.

Hold and Modify

If you have only an A500 you will probably be a little stuck for memory and not be able to produce HAM - Hold and Modify mode gives far more colours than normal - or high-res images. This is not too bad but it will make the desire for that memory expansion even more urgent. The results of the ray-tracer program range from fairly average to superb, depending on the positioning, textures, colours and shapes used to make the image. The book describes all the necessary maths and programming ideas in a reasonably straightforward way and if you want to know more about this subject, it is definitely worth examination.

Title: Amiga 3D Graphic Programming in Basic

Authors: Jennrich, Messmann, Schultz

Publisher: Abacus

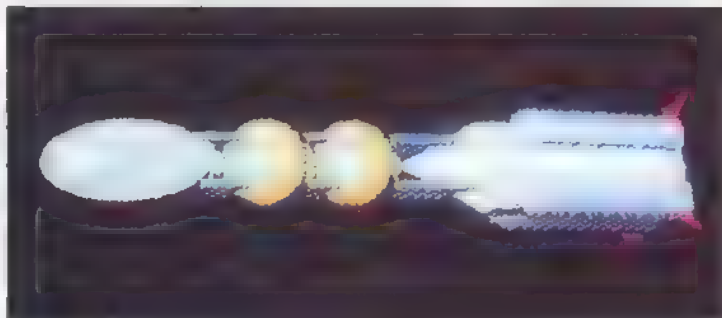
ISBN 1-55755-044-1

Price: £18.45

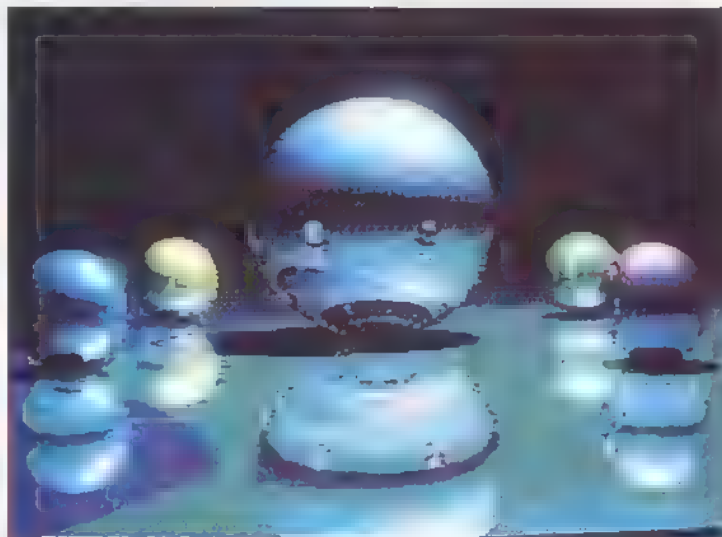
Disc price: £16.45 inc. VAT



Ray traced demo on the disc.



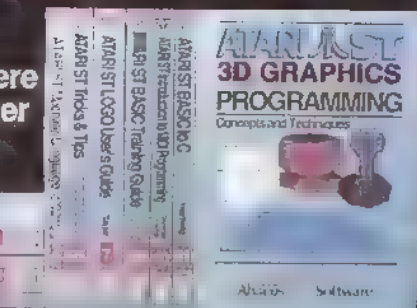
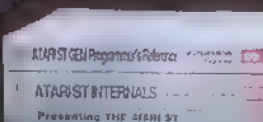
Starship created in Basic on the Amiga.



Ray traced cylinders surround a similarly created sphere.

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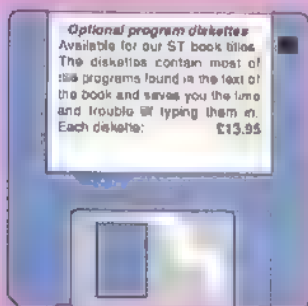
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Artful Archie

A ■ Nouveau is an impressive new art package for the Acorn Archimedes. The version I reviewed was provisional but I found only two bugs during testing and it felt like a finished product. Mode 15 is used to provide 256 colours and reasonably high resolution.

The program has a bewildering range of special effects. The most versatile is the distort option which allows you to reshape one square picture of any size - known as a 'brush' - to fit into any shape or shapes. It is also possible to bend or enlarge a brush to any size. One surprising omission is a rotate, though flips are available.

One of the most powerful concepts used in the program is that of 'cycles'. They are sets of colours used consecutively. Thus, if I



select a cycle of blue shades and draw four rectangles, each one would be in a different shade from the one before. The 'cycles' are also used for 'graded' and 'shaped' flood fills. The area to be filled is split into parts and subsequent cycle colours are put in each part, providing slowly-changing colour areas.

As well as these more advanced options, the program has the standard paint program features. Its zoom option can magnify up to 16 times and also shows a reduced view. There is a random spray gun and pattern and font editors. The fonts supplied are disappointing and it is impossible to use the Archimedes system fonts but the editor is fairly powerful. A variety of pre-defined shapes is provided and the user is able to create his own as well. Sadly, the user shapes cannot be filled in the normal way. There is also an arbitrary curve generator.

The provisional version had a black and



white printer dump which looked impressive and was easily adjustable to increase contrast in pictures of varying shades. A colour printer dump will be provided with the release version but I was unable to test it.

Art Nouveau is controlled by a clever pull-down menu system which does not interfere with showing the whole of the screen you are editing. The menu-bar appears only when you press the mouse Menu button. Many options are selected from sub-menus

(left) Note the 'cycles' of blue shades which fill the word 'ECLIPSE'. (below) Select a reduced view with the arrows and magnify by up to 16 times.



which appear as you drag out of the right of a menu option with an arrow by it. This is simple and intuitive.

Unfortunately the program has no command key shortcuts to allow the advanced user to select an option more rapidly. This can make some actions monotonous. Missing from this program are toolbox windows which can remain on-screen readily to hand. The program suffers from modality. Although all its modes are displayed on a status bar which appears with the menu, I found this less helpful.

The documentation I received was a draft version. It was split into a six-section tutorial and a reference section. I found it easy to read and helpful, although it would have benefited from an index.

Art Nouveau is a highly versatile and impressive package. It is capable of a wide range of special effects and does not skimp on basic features. Though its menu system can become cumbersome for more repetitive tasks I found that no great problem. A fast computer like the Archimedes is a good tool to play with high-resolution graphics and Art Nouveau is a good way to get the most from it.

Contact Mike Charnley at C.A.L. on 0698 733775. Price £42.50 including VAT and p&p.



Animated conversations

DELUXE PAINT II has long been rightly held as the best art package on the Amiga, but recently the competition has been catching up fast. Now Electronic Arts is putting the fox among the chickens, by giving the world Deluxe Paint III.

To my mind there were only a few things in Deluxe Paint II that were overlooked; so when I first heard of the update I wasn't expecting many mind blowing additions, just an improvement on the brand leader of home art packages.

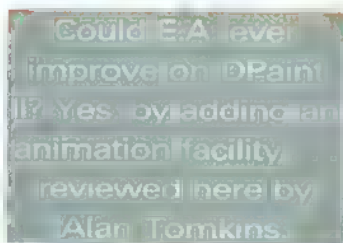
Well, Electronic Arts has gone one better than a mere update and has added a complete animation package called AnimPaint.

Coming with three discs, the first of which is the paint program, the second is the animation package, and the third contains demo art and animation files.

Looking first at the paint package, by its very nature DPaint III needs at least one megabyte of memory and a second disc drive, to function smoothly. But, because of the operating system Commodore put into the Amiga, things still work on the slow side, although DPaint III has speeded up its fill and perspective functions which is a nice touch, and users can put DPaint III on a hard disc with ease, and keep the main discs as back up.

On booting up you get the familiar work screen of tools and palette on the right hand side, and drop-down menu bar across the top of the screen; this can be toggled with F10.

New features include flipping the whole screen without having to cut a brush, and the



can turn off all the colours around the area to be worked, then when spraying only the face gets painted.

The Stencil function is easy to use and is very flexible, with a little practice you will soon discover a new way of painting.

Auto Transparency lets you pick up a brush from a solid background. *Auto Grid* gives you the choice of automatically re-sizing the perspective grid; the Font menu has gone, to be replaced by right clicking the text tool to bring up a *Choose Font* requester. From here you can choose fonts, sizes, and styles, and it lets you see the chosen font before you use it.

There are two new brush modes: *Tint* and *Extra Halfbrite*, plus four new Fill Types: *Tint*, *Brush*, *Wrap*, and *Halfbrite*.

For those people who use paint packages to do video work, DPaint III now lets you paint on the Overscan screen. This allows you to view and edit your image in the border area around the normal viewable screen area, you can also adjust the position of the screen by holding down CTRL and using the cursor keys.

Extra Halfbrite has had two fill types and a new painting mode added. If your Amiga has *Extra Halfbrite*, you can now paint shadows and highlights, and gradient fills using the standard palette, and the halfbrite equivalents.

DPaint III comes with a 245-page manual that tells newcomers how to get started, then outlines a guided tour of the package, before giving you four well-written and easy to follow tutorials,



DPaint III's Animbrush mode now lets you draw sprites and turn them into brushes so you can test the combinations; the brushes are at the bottom.

two functions I wanted have at last been included: *Outline* and *Stencil*.

Outline adds an extra pixel line in the colour of your choice, a must when drawing games graphics, and unlike some packages DPaint III doesn't eat into the image being outlined.

Stencil has its own requester box in which you can define a stencil before painting or spraying; if you want to spray a flesh tone onto a face, you

before getting into the nitty gritty of how everything works.

So, on to the section that you've all been waiting for: the animation - or AnimPaint as Electronic Arts call it. The basic idea with AnimPaint is that you have multiple pages that you can paint on, and then flip through them to create the impression of a moving image, just as real cartoons are made for the movies.

First you must create your frames for the animation: the Set Frame Counter requester lets you set the number of frames, say, for example, ten.

You can now paint a dot on each screen in turn, each with a different position moving from left to right; now choose Control>Play from the Anim menu and watch your dot move from left to right - hitting the space bar stops the animation. This is a very simple but effective way of creating animations, and works well, but AnimPaint lets you also paint while the frames flip automatically.

Requesters

The Options requester lets you clear the current frame, or any other frame you want to clear, then sets you back to frame #1; at any point you can choose Control>Play to inspect your animation, then make any alterations.

The Move requester lets you move, and rotate a brush over a number of frames, and you can move the brush in all three dimensions. The Move requester is very powerful and many impressive animations can be made from this function alone. You can set the X, Y and Z coordinates, set the direction, and angle, then preview your sequence.

In addition to moving the brush along an axis, or several axes in combination, the Move requester lets you rotate the brush around one or more axes. Clicking "clear" wipes all the distance and angle fields so you can reset them.

You are given a wire-frame representation of your brush, so that you can see how the coordinates that you are choosing, act on your



AnimPaint brushes create sprites for an explosion for 'Mr. Hell', a forthcoming game from Fishhead.

points.

DPaint III also lets you select an area of animation as a brush and lets you paint with it, the result is that the brush changes while you paint, and depending on whether or not the frame changes, you create either animation or interesting effects.

The Control option displays a submenu of options for moving around in your animation frames, and for playing your animations.

Set Rate sets the speed. Left and right arrow cursor keys, slow down or speed up the play of your animation. You can position the current frame to any of the available animation frames. While Ping-Pong plays the sequence forward then backward and so on.

When you have created a few of your own animations, DPaint III has provided what they call the Player Utility, for playing them back. This is a stand-alone utility accessed from the workbook.

Using the features of AnimPaint you can either create animated brushes (ideal for drawing and testing sprites), or build up complete screens of animation, like the famous Disney cartoons. But remember that when creating animations, that they are very memory hungry; the two animation modes in this new DPaint are expanded and compressed; both have different memory requirements.

The expanded mode requires that there be enough memory to duplicate the entire screen for every frame, for example if you are in (320x200) 32 colours, which takes 40k per screen, so ten screens takes 400k.

The compressed mode is based on the difference between each animation frame, the more a frame is different from the one before it, the more memory will be needed to store it. The manual outlines ways of saving memory for those who are near their limit; but don't be put off buying DPaint III if you only have a half megabyte machine, for you can just scrape by with using only the paint section, and in so doing you will soon be tempted into upgrading your memory.

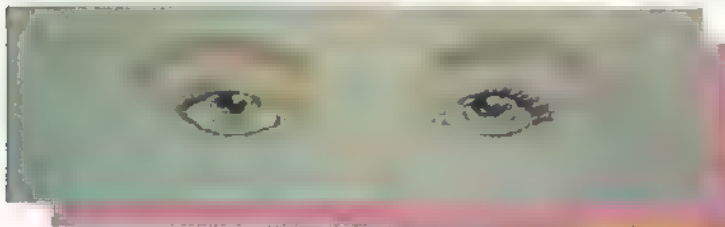
There are also 116 keyboard commands for those who prefer to use them (let alone remember them).

Improvements

So to sum up DPaint III has included two main missing features from DPaint II, plus improved the running of the package; this alone for me makes DPaint III stand out from the crowd; and worth buying on these updates alone. But with the addition of AnimPaint, which is a very powerful animation program in itself. DPaint III is now in a league of its own. Once you have taken the time to read the manual - and learn both programs - you are in for many hours of pleasure, even if you don't consider yourself an artist.

The thing I like best is that you can now create sprites for games and test their animation in one package, for the first time on the Amiga. Both the Paint and the Animation programs are straight forward to learn and use, although I wished they had redefined the spray and fill icons, but that's only a tiny niggle.

The only drawbacks I can find in DPaint III aren't of Electronic Arts making, for you can't have a package this powerful without it being memory hungry. The main problem with DPaint III, or any other advanced art package, is the Commodore operating system, even with a 20Mbyte hard disc drive it takes nearly a minute to load a medium sized animation. When are Commodore going to take a look at The Mac II? Or even the ST - to see how a user friendly operating system with fast disc access works. The Amiga is a very powerful machine, but only when Commodore put a decent front end on it will it be a truly great machine. But back to DPaint III, all I can say is "Buy it. You'll like it".

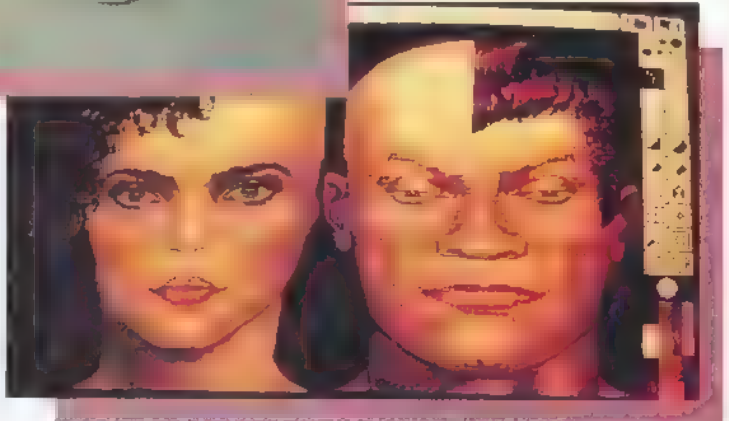


A single frame from the 'Cry' animation sequence.

brush, then click preview and watch the wire frame move or rotate on your chosen path.

You can set the movement along the brushes axes, plus rotate the axis. Cyclic and Non-Cyclic moves set an animation that will loop back on itself (cycle) or chain from the current move to another move of a similar type. An animation that is linear will end at the last frame you requested with the move requester.

The Ease Out and Ease In edit fields let you specify a number of frames over which you want the brush to accelerate or decelerate in your animation. The primary advantage of these features is that you can make the brush movement smooth at the beginning and end



Identical faces made up with brushes included in the package on a low-res screen.

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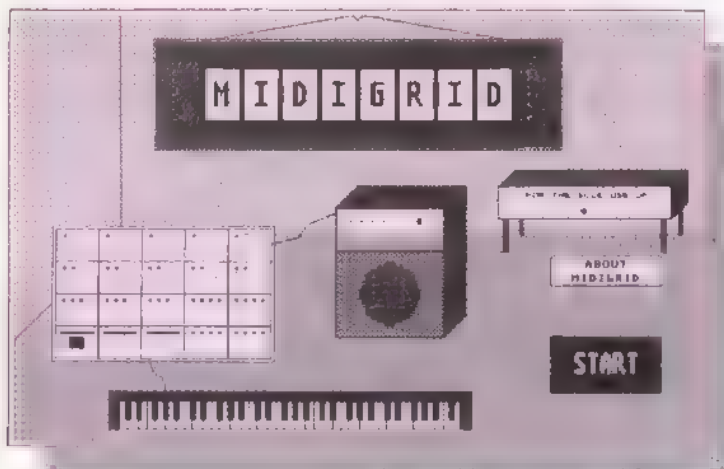
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True grid



For several years, a group of musicians, electronics engineers and computer experts at York University has been exploring new ways of linking music and computers. One particular interest of the group, known collectively as the Composers' Desk-top Project, has been to use computers to ease music-making for disabled persons.

One product of the work is a program which was developed originally to allow someone with restricted movement to create complex musical pieces by "playing" an Atari ST mouse. The program, called Midgrid, has proved to have a far wider potential clientele and has now been produced in a commercial version.

Midgrid launches itself automatically into a demonstration mode which shows the versatility of the program. If your ST is linked to a Midi instrument, ideally a Roland MT32 synthesiser module, you will hear a medley of tunes ranging from a stirring rendition of *Abide With Me* to a jazz-tinged drum solo.

Leaving the demonstration behind you move to the main screen, where the first thing you notice is that although the program is mouse-driven it does not use

GEM. Instead, it has an idiosyncratic and rather crude user interface in which a cursor jumps, rather than glides, between a series of boxes which occupy most of the screen. Along the top of the screen is a row of icons which are activated by the cursor hopping on to them.

The number of boxes displayed can be chosen by the user to be anything from a single vast rectangle to a 10 x 10 grid of tiny boxes. Boxes may be blank or may contain one or more dots or a solid line. The dots represent single notes or chords - up to 16 notes per box - while the line represents a sequence of notes or chords strung out over time.

Square cursor

As you push the mouse round, a square cursor hops from one box to the next. Nothing happens musically until you press a mouse button. A touch of the left button instructs your synthesiser to play the notes represented by the dots in that box, or to start a sequence if there is a bar in the box. The notes continue playing as long as you hold down the left button, even if the cursor moves to another square. With the right button pressed new notes sound for each

box in which the cursor lands. By careful manipulation you can use the left button to sound a chord over which the right-hand button can pick out a melody.

How do the notes get into the boxes in the first place? There are two routes - from an external Midi instrument or from the ST screen. To achieve the latter you move the mouse to the icon strip at the top of the screen. As you pick an icon, the strip changes appearance. So the "choose instruments" icon first allows you to select the Midi channel on which to transmit your sound and then to choose the particular sound you want.

You now have the sound and Midi channel for your note but not its pitch. So you go to another icon which, when activated, displays a piano keyboard - or an abstract alternative for users unfamiliar with the piano - across the top of the screen. Slide the cursor along this keyboard until it reaches the note you want, tap the right button, move down to the box where you want the note to go, and tap the button again. In that way you soon assemble a series of boxes each containing one or more notes.

Sequences

You can now "play" the boxes using the mouse as described and, if you wish, store your performance as a sequence in another box. The sequence can then be triggered in a similar way and up to eight versions of the sequence can play back independently at staggered intervals. Another option is to link sequences in separate boxes so that they start playing at the same time.

Midgrid can also multi-track, allowing new sequences or data generated by an external Midi source to be stored in the same box as existing sequences. In that way, it is possible to squeeze a complete composition into a single box.

Editing functions allow you to delete, move, copy or exchange boxes or to alter the contents of any box. You can delete or insert notes and transpose or change the Midi channel allocations of either individual notes or complete boxes. You cannot change individual notes within sequences but you can transpose an entire sequence, adjust its playback speed or alter its Midi channel allocation.

An alternative to real-time entry of sequences is step-time, in which you first designate the order in which you want a series of boxes to be played and then step through them by tapping the mouse buttons at the required speed.

The Midgrid *coup de grace* is a facility known as "keyboard mapping". It allocates each box in the grid to a separate note on a Midi instrument, so that playing that note triggers the box into life. The possibilities this unleashes are mind-boggling. Playing a

simple chord on the Midi instrument could stimulate a string of sequences or, more realistically, produce a more complex chord with specific notes such as overtones being sent to different instruments on appropriate channels. It will take ages to explore fully the potential of keyboard mapping.

Midgrid is certainly intriguing and, what is more, musically useful. My main reservations concern its user interface which does not have the intuitive appeal or ease of use of GEM. The movements of the cursor are somewhat unpredictable, so you sometimes find yourself in the wrong box. Another limitation is that you cannot tell by looking at a grid what notes there are in each box or even what piece is being displayed. It is only by trial and error that you discover.

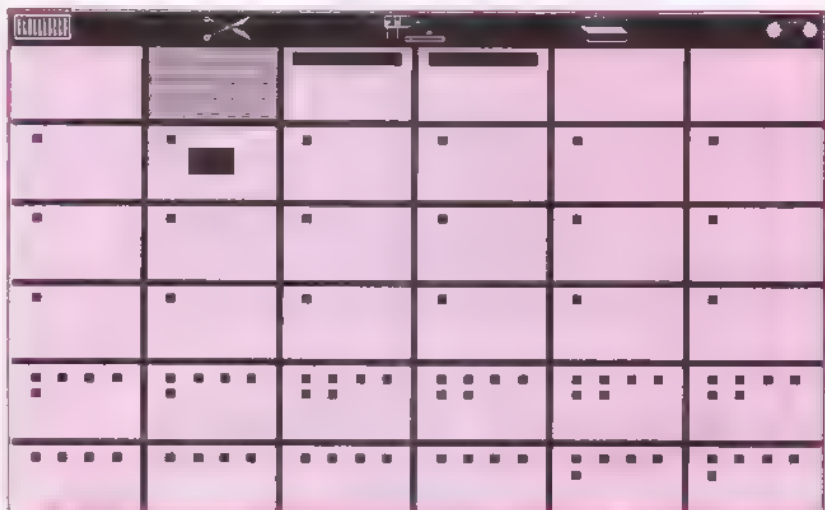
The pricing raises another question-mark. The recommended price of £134.95 seems rather high, especially considering the crude interface. The price will inevitably

limit the appeal of a program which most computer-based musicians could probably use to good effect.

Finally, because the program relies so heavily on the mouse, users must expect to

get through a few mice while making music with Midgrid. ☐

Composers' Desk-top Project, 11 Kilburn Road, York YO1 4DP. Tel: 0904 628696.



Midi input channel can be selected from the bar at the top of the screen. The dots represent single notes or chords - up to 16 notes per box - while the line represents a sequence of notes or chords.

PUZZLE

Here is an easy way to working out square roots if you don't have a calculator handy and you don't fancy the laborious method of using the traditional 'pencil and paper' method. Let us suppose that you wish to evaluate the square root of 89000000. First, split this number into pairs of digits:

39 89 00 00

Then, for each pair, subtract the lower of the two digits from the higher:

9-3=6 9-6=3

0-0=0 0-0=0

Write the answers in order to get the square root:

9300

It couldn't be simpler, and any little gifts which you might like to send me in gratitude for simplifying the calculations of square roots will be gratefully received.

Of course, this issue appearing near to the first of April might lead you to smell a rat! And you wouldn't be far wrong. The method outlined is totally useless, the value chosen above was just one which happened to work.

Can you find one other eight-digit number whose square root can also be calculated using the method shown?

```
100 P=3000
110 R=P:FLAG=0
120 FOR T=1 TO 4
130 R=R-T*100:R=R*3/4
140 IF R<0 OR R<>INT(R) THEN FLAG=1
150 NEXT T
160 IF R/4=INT(R/4) AND R>=2000 AND
R<=2500 AND FLAG=0 THEN PRINT P
170 P=P+4:GOTO 110
```

SOLUTION TO PUZZLE OF MARCH 23-29

Answer: The amount won was £80.92p.

Solution: From the information given, we know that the four girls took 1, 2, 3 and 4 pounds (plus one quarter of what remained), and that there was a minimum of twenty pounds left after the last girl had taken her share. Therefore, there

must have been at least £30 at the start.

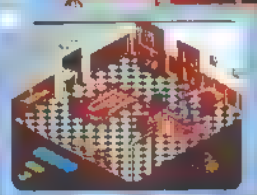
The program starts with this sum and then performs each operation in turn (using the FOR/NEXT loop (T)). The variable R denotes the amount of money remaining (in pence) at each stage of the operation. Should this amount fall below

zero or become a fractional part of a penny, the flag is reset to 1. Finally a check is carried out to determine three things:

- a) the flag is still set to zero
- b) the amount remaining is exactly divisible by 4
- c) it is in the range of twenty to twenty-five pounds. ☐

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Vigilante

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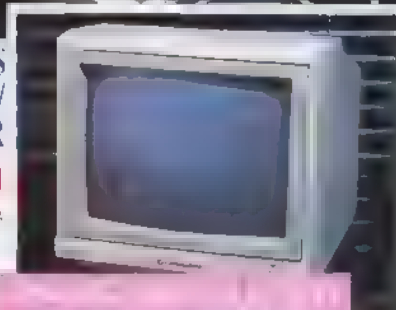
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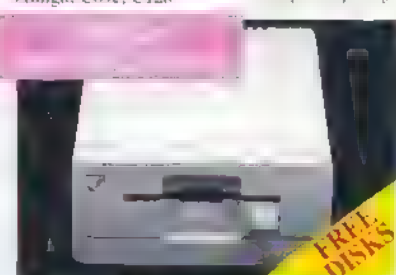


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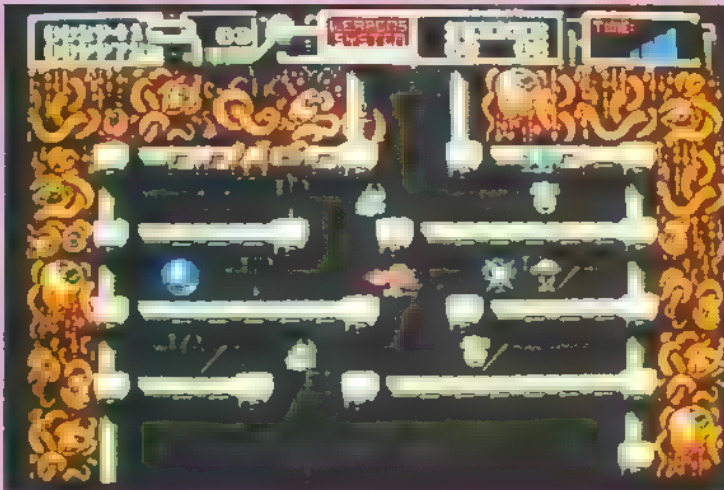
Program: Cybernoid II
Version: ST
Price: £19.99
Supplier: Hewson
Reviewer: Adrian Pumphrey

RELEASE DATES

ST: May
Amiga: May
Spectrum: Out now
C64: Out now
CPC: Out now

You can't keep a good cyber-pirate down and just to prove the point they are back even bigger and meaner than before.

You did such a good job last time defeating the pirates and repossessing stolen goods that the powers that be have decided once again to risk your life and limbs for the greater good of the Earth. To sweeten this bitter pill you have been provided with an enhanced version of your earlier craft, complete with an array of even deadlier bombs, missiles and other things which go boom in the night. Launch your tracer missiles and watch them zoom around the edges of the screen wiping out those nasty little clingers. Or you can go for the direct approach



• What's the hardest thing in the world? Multiply that by a thousand and that's only a millionth of how difficult this game is!

and stick a seeker on their tail!

Journeying through the pirate enclave is enough to give even the most hardened joystick jockey the creeps with its walls composed of masses of winking eyes and dripping vines. Avoiding these drips can be a hazardous procedure as time must be spent observing the patterns before a move can be made. Unfortunately if you hang around too long the multi-

coloured homing aliens appear and (unless you can come up with some well-serious blasting) you're in real trouble.

Metallic flowers open and close their protective shielding, pausing momentarily to spew death in your general direction whilst the heads of mutated beasts pour down their deadly rain of missiles. In between all this flak you must negotiate the various obstacles,

FAX BOX

Program: Archipelagos

Version: ST
Price: £24.99
Supplier: Logotron
Reviewer: Adrian Pumphrey

RELEASE DATES

ST: April
Amiga: May
PC: May

The Ancients were a lofty race who spent their time contemplating the wonders of the universe. One day their thoughts took shape and from the chaos rose the Archipelagos. Almost random in appearance the islands were a sight to behold.

The thought continued and a race known as the Visitors came into being. They gazed upon the Archipelagos and coveted. Possession came in the form of an obelisk powered by a series of standing stones on each of the island complexes. When the ancients forbade this manoeuvre the visitors rose up and the blood of the ancients flowed across the land; the power of the blood brought corruption to the land.

Your task is to clear the obelisks from the Archipelagos fulfilling the last wish of the ancients. To destroy each obelisk you must first remove its power source by destroying all the standing stones, the catch is that a stone can't be destroyed unless the patch of land it is standing upon connects to the land occupied by the obelisk. To achieve these desired connections you have the power to create land but using this function requires energy which can only be gained by destroying stones and collecting the spore pods which



• Yes, we have no bananas.



grow in abundance upon the land masses.

Apart from the relatively minor problems caused by the separate land masses you must also deal with the corruptions created by blood of the ancients. On the first 12 levels this corruption takes the form of trees which move across the landscape towards you, infecting the land as they travel. Although it is certain that if you find yourself in such a place of infection it is possible to decontaminate, this again costs energy. As you progress through the levels you will encounter the more dangerous - corrupted bodies of the ancients now reduced to sleeping sections of the islands. Further encounters include the Egg of Blood. This vine draped apparition sits quietly upon its island residence until a fateful lightning strike brings it to life. Its effects vary; it can either explode and infect the land with the blood of the ancients or start a



• Aargh! They done for me again!



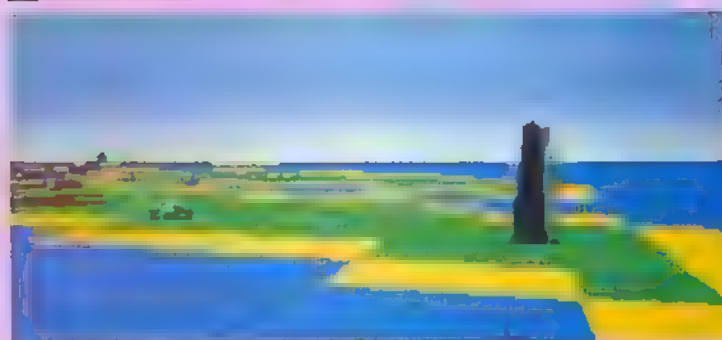
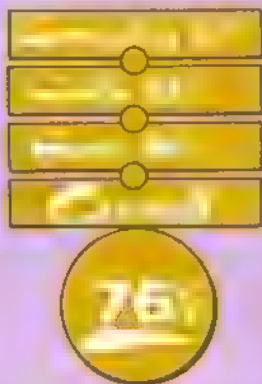
• Come and have a go at the Cybernoid aggro. Sorry about that outburst. Hope you don't think I'm a thug or anything.

the designers favourite being the aliens which oscillate in narrow tubes which require your skill and determination as you match your velocity with that of the aliens until you are opposite the desired opening, praying all the time that the homing aliens will bide their time.

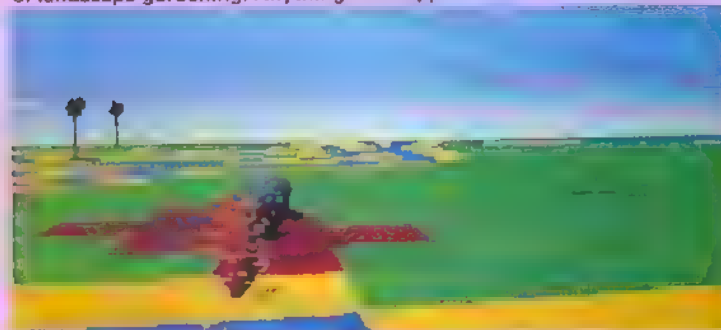
Scattered around the landscape you

will find various pieces of weaponry which can be added to your craft to enhance your death-dealing capabilities. A rear firing gun can be mounted to deal with those aliens who choose to sneak up behind you. Spiked balls can be collected and placed in orbit around your craft to fend off pirates foolish enough to get too close. Destroying the spaceborne raiders relieves them of their stolen cargo, which you can then collect for a few extra points.

You may find this game a little on the hard side but few things worth completing are easy. So if you fancy dishing out a little death and mayhem accompanied by some truly grotesque landscapes get your teeth into this one.



• Destroy the Monolith within the time limit. Yes, life at the cutting edge of landscape gardening. Anything can happen.

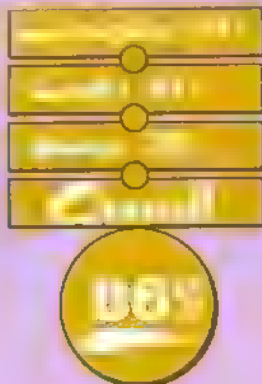


• In the foreground is a lost soul. Give him an A-Z someone.

chain-reaction that eats away the island. The final horror of which to beware are lost souls. These hapless beings wander the archipelagos searching for spiritual energy, namely your own.

As the levels progress, the number of islands increase and the inhabitants combine to produce fiendish puzzles. To cap it all off you are required to destroy the obelisk 90 seconds after destroying the last stone or a grizzly fate will descend upon you.

With 9,999 levels, you can be sure this game will still be producing the challenges for some time to come.



FAX BOX

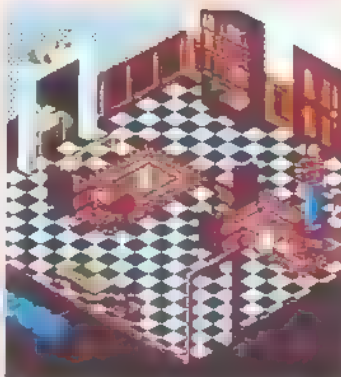
Program: Raffles
Version: ST
Price: £19.99
Supplier: The Edge
Reviewer: Adrian Pumphrey

RELEASE DATES

ST: Out now
Amiga: Out now
Spectrum: Out now
C64: Out now
CPC: Out now

As tea leafing goes you're one of the best and when the local widow, Lady Crutcher, leaves a window open you just can't resist. Unfortunately it's a trap.

The good Lady has a slight problem and you are just the man she needs. Her late husband was big on paranoia and rather than place his valuables in the bank he hid them in the house; unfortunately the locations of these treasures died with him. As a master thief it is your task to locate these hidden treasures and give them to the window minus, of course, your commission. Mind you, she forgot to mention the animal experiments of the late



• This looks a bit like a set from the Idea Home exhibition.

lamented master.

This has to be the most impressive 3D game to date with its solid rooms and objects, each of which can be pushed, pulled and in some cases, picked up. This means you can cause a great deal of trouble when trying to reach a goal or avoid a life-threatening situation. One object whilst your character is obscured behind a wall or some other similarly large object.

This ability to manipulate the objects encountered allows you to stack objects upon each other in order to

reach those out of the way necessities. This all sounds like a bit of harmless fun but the giant mice and killer budgies are far from harmless and don't look as though they are into it for the fun. The creatures constantly harass your every move, although there are ways of temporarily disabling them, but I will leave you to discover the modes and methods for yourself.

Players used to boring old games with limited options may find this game a little awesome as the player can literally do something with everything although I must warn you about standing on candles.



FAX BOX

Program: DragonScape
Version: ST
Price: £19.99
Supplier: Software Horizons
Reviewer: Adrian Pumphrey

RELEASE DATES

ST: Out now
Amiga: Out soon
C64: TBA



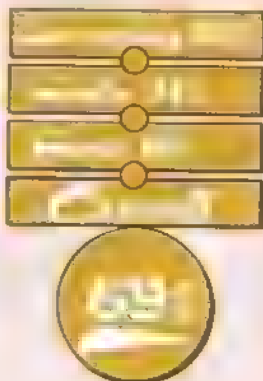
the form of plant cells covered in sticky cilia, but what is arguably the deadliest form of free-floating nasty, the red pig's head. Other creatures that assault your dragon's energy level take many bizarre forms some almost recognisable as winged snakes and tin lobsters but others more abstract.

The only way to replenish your rapidly-depleted energy level is to make contact with the circular P symbol which floats in the vicinity of your beast. Care must be taken however, for if you accidentally flame the power symbol too many times it will disintegrate, leaving you without a means of replenishing your energy.

Each of the five levels vary in theme from hi-tech to primitive woodlands. On level two, the hi-tech one, you need not fear the traps but nearing completion of the level you come face-to-

face with an alien so large it occupies a good two-thirds of the playing area. After the complacency has set in and you begin to get a feel for the game you must contend with level three with its floating receptacles and vicious beasts. Things continue in very much the same theme until the completion of the fifth level when you must face the awesome end-game beast.

Nice 64-way scrolling and fast dragon responses, especially the circular flaming motion, but the scrolling section of the screen is far too small to allow anything but cautious play as it is all too easy to be surprised by the oncoming hazards.

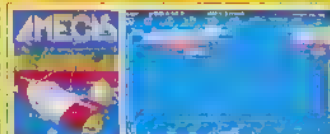


Plucked from a bus to Croydon and partnered with a moronic dragon named Garvan, you find yourself plunged into a world of chaos.

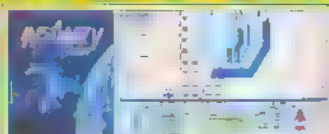
Welcome to the once peaceful land of Tuvania where the forces of Kaos have touched a once peaceful land and scattered the 40 artifacts that give the land its stability. Roam the land aboard your draconic partner flaming all who dare challenge you on your epic task of restoring order. To achieve this task you must collect, in each of the five levels, eight symbols, each of which must be placed in the appropriate receptacle.

To my mind the first level is one of the hardest as it is occupied not only with vicious dragon traps, which take

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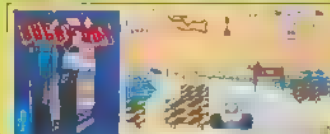
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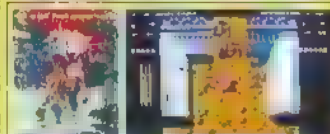
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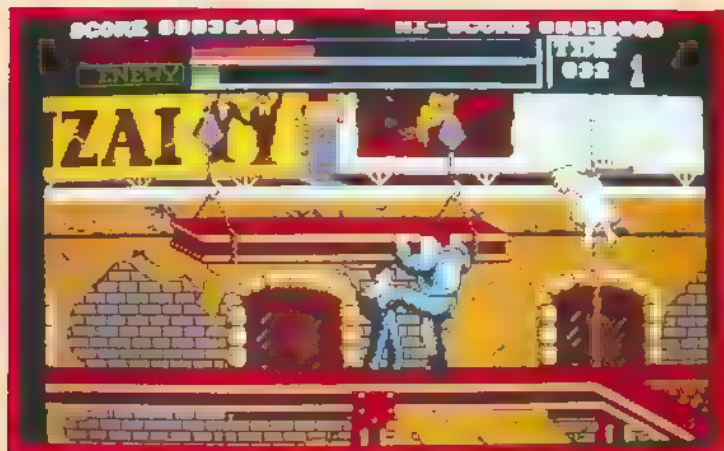
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VIGILANTE

• OOOH, I'll slap your leg ■ you do that again, you big beast.



FAX BOX

Program: Vigilante
Version: Amiga
Price: £14.95
Supplier: U.S. Gold
Reviewer: Mark Ulyatt

RELEASE DATES

ST: March
Amiga: March
Amstrad: March
C64: March
PC: March

Which writes the drivel that accompanies games? I think we should know exactly just who is responsible for foisting dross like the following on the unsuspecting public: "The police cannot stop the street gangs (well it's the government cut-backs you see)..."

As a vigilante (with ■ death wish?) you must defend your people's turf (this is set at Wembley by the way)!!!

Downtown the skinheads have taken over. Their gang is trying to take over your turf (obviously American football players).

They have taken what ■ yours (er... when was that exactly?) and now have

placed you under pressure by kidnapping Madonna (why? ■ she your sister or something? Is the price for her return a packet of Rolos?).

No, the price is your turf of course (good job this isn't set on the West Coast otherwise it'd be surf and turf)!!! The police are useless. You must try to free her (how about a game of chess instead)."

So there you have it, you're a street cred, well rad vigilante. The waffle simply serves (and with no logic whatsoever), to lead you into the various settings for the conversion of the Irem beat 'em up, **Vigilante**.

Starting off in the Main Street scenario, you are assailed by all manner of ne'er-do-wells, armed with knives, chains, guns, dynamite and even motorbikes (aha, shades of *Target: Renegade* here). The idea is simply to progress ■ the end of the street, fending off the scum, until you meet, and defeat, the very large gang leader, thence off to the next section.

The view is sideways on (as usual) and on the Amiga (and Spectrum) you have parallax scrolling of the scenery as you stride remorselessly on. Pity that it's a very tedious sort of plodding rather than ■ brisk walk, because this leaves you with the impression of never getting anywhere.

While you plod, the gang hoodlums



• Mohican biker coming 'atcha! Have his face off!



• Up close and physical. Ever considered moving to Milton Keynes?



VIGILANTE



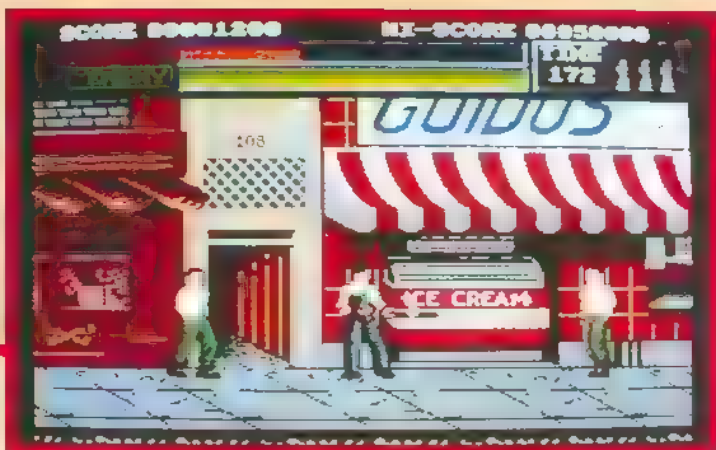
• Cornered like a beast of prey by two suede-heads.



• The wrecking crew are on overtime, and you're the one paying for it!



• You ever tried that in a tight pair of jeans?



come on, two or three at a time, from both directions, and this is where the trouble starts. While it is fairly easy to kick seven bells out of them when they attack from one side, as soon as someone comes up behind you are going to get pinned down. Alas this means frantic joystick waggling because if you don't break that hold very quickly then a chrome dome with a chain or knife will all too rapidly rearrange your face, organs and lower abdomen.

Personally I felt that they beat you senseless far too quickly, and this was only on the first level.

Still, with acrobatic kicks, a faster pair of hands than Sugar Ray Leonard (in his heyday) and the old shin poke that always works so well, you have some sort of chance against the bad guys.

Beating on, the next series of encounters take place in the Junkyard, then on to the Brooklyn Bridge (I've been there!), Back Street (we've been there), and finally a building site, up amongst the girders.

And what's this I spy, only Madonna dangling from a crane, the prize for the victor, her weak cries echoing around the battlefield. Quite why there needs to be this mindless sexism I don't know. As Madonna is shown being thrown onto the floor once captured, right at the beginning of each game, I

was tempted to call her the *Fallen Madonna With The Big Boobies*. But that would have been too corny.

Anyway, Vigilante is a reasonable beating game, and certainly more palatable than the disgraceful (and outdated) Human Killing Machine, and the 16-bit versions are reasonably priced for once, at £14.95.

With five scrolling scenarios, reasonable graphics, sampled sounds (from the coin-op) on the ST and Amiga, Vigilante should keep most beat 'em up fans happy, but I still have my doubts about when you get surrounded.



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If you already own an Atari ST, it should not be registered on our mailing list as we already have it as a name. We would be pleased to send you a copy of our price list and newsletter if you would like it. If you have not already received the newsletter, please send us a request for it. We will be happy to send you a copy of our price list and newsletter if you would like it. We will be happy to send you a copy of our price list and newsletter if you would like it.

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(PCW1)



The ultimate being, Tony Bridge, takes you on the ultimate quest in the lands of Ultima IV.

"A perfect mortal - an Avatar - is sought to conquer evil and lead the nation into a golden age of prosperity."

So goes the introduction to *Ultima IV*. To achieve Avatarhood, your character must gain enlightenment, Buddhist-like, to the eight virtues. While Humility and Compassion may sound a little yawn-inducing, Valour will require you to indulge in combat as often as possible, so there's plenty of excitement.

Runes and Mantras are essential in completing your quest for Avatarship. In order to gain the "inner light" of the eight philosophies, you must visit the appropriate shrine and meditate. You'll only be allowed in if you possess the Rune of the Virtue and you can only meditate if you have learned the Mantra. Unfortunately, you must visit each shrine three times - as

villages, you'll meet characters who ask you to undertake some perilous quest on their behalf. For example, in the capital city of Britain (that's the name of the city - the author, Lord British, is a terrible Anglophile), you'll meet a person named Sebastian, who will tell you of a terrible secret. Apparently Mordaine's evil influence hasn't yet left the world (Mordaine is the Evil Wizard who started off the whole *Ultima* story) and you must ask at the Pub of the Buccaneer's Den about the Skull.

Talking to characters is the most important facet of *Ultima*, though of course combat is the other main pastime that your party will indulge in. Everyone you meet in your travels in towns and villages must be interrogated - while most will be just scenery, some will hold important information on, for example, where to find a rune or mantra. Getting information from a character is done by asking a question and then picking a key word from the answer to carry on to the next question.

A typical conversation goes like this:

*The Shepherd in lodgings in Britain: I escaped Magincia!
Player: Magincia?*

dreds of leagues hence (RPG-ese for "you'll get killed off a dozen times before you get this part of the puzzle"). Incidentally, speaking of characters, I've just come across a wonderful invention - Tracie the Starving Journalist. Incidental to the plot (I think), but a nice example of the inherent humour of the game.

You must sometimes use a bit of cunning in order to elicit the final drop of information - for example, beggars abound and by giving generously your humility and compassion ratings will go up. But in Skara Brae is a beggar who will give you important information as long as the gold you give her is the very last piece of money you possess (never mind, there's plenty more lying around!).

However, beware of the secret treasure room in Lord British's castle! It's a cinch to steal the gold, and this may seem an unbelievably easy way of getting wealthy very quickly, but your Honesty alignment will suffer, and this may eventually cost you the game.

But there is something there that will be useful to you. Get into the habit of pressing the S key as you wander around, this will initiate a search of your immediate

Adventure Bridge

they are not conveniently set next to each other, but rather at all the corners of the land (and yes, I know there are four corners, not eight!), you'll have a long journey ahead of you. As well as all this

mantra-chanting, there are several earth-bound quests for you to go on. As you wander around the towns and

Shepherd: Pride was too great in Magincia.

Player: Pride?

Shepherd: The City was destroyed by demons for its pride.

There are dozens, hundreds of characters in the Britannia, and although most of them are either stupid or bong on rather sick-makingly about Love and Humility, just occasionally you'll be given directions to another character who will have an important part of the jigsaw - usually this other character is close by, but can sometimes be in another town hun-

surroundings and reveal anything of importance and place it in your inventory at the same time.

To find the Treasure Chamber and other secret rooms in the buildings of Britannia, look out for a tiny white spot in the brickwork of the walls - monitor-owners are in luck here!

Another way of getting extra tidbits of info is by paying more than the asking price for goods, for example ale. A barkeeper will help you with gossip if he is able. That's all this week, but there will be more in *Ultima* soon.

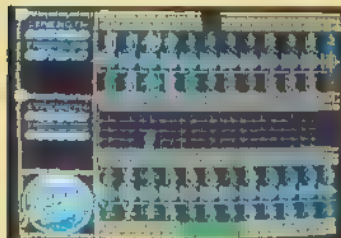


C.I.A.

Richard Henderson, the Gamesweek operative, dispenses vital information straight from the corridors of power



Would you believe that this is my 25th CIA, a sort of Silver anniversary, so to celebrate the occasion we've got oodles of pokes and tips, for a range of machines.



• Steve Haw gains his Black Belt.

NINJA MASSACRE (Spectrum)

Steve Haw, from Warley, West Midlands, has sent in this important tip - "Sausages don't grow on trees, you know!!". Oh yes, he also gave us the level passwords for this budget bash.

SNOW - Level 5
EASY - Level 10
RACK - Level 15
BLUE - Level 20
STAG - Level 25
HULL - Level 30
BEER - Level 35
BARD - Level 40

DRAGON NINJA (C64)

Howard Williams, Derby, has found a bug, say "oooh" everybody, in this great arcade conversion. As such he speaketh forth to educate the masses.

At the start of level 2 do a super jump (diagonal right with fire button pressed) and keep this position until you reach the end of the level (if you fall off, don't worry, you'll only jump back up again).

Also, here's a few tips.... When you get to the blue driver's cab (what's a blue driver?), jump onto the road and await the baddie. At the moment of his arrival keep performing a face kick until

you come into contact with him. Now do a super jump away from him and repeat the face kick method.

The next tip applies to all levels.... When strolling along and a red/green ninja appears, just super jump over him and he should disappear.

SLUG (C64)

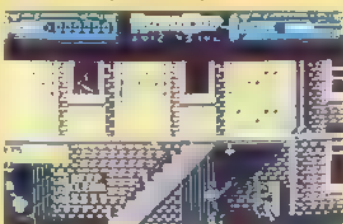
Welcome, with me, a long time CIA contributor, Robert Troughton, from Keighley, West Yorkshire, with a few pokes for this popular C64 game. Unfortunately it requires the 'reset' method, so get out your switches.

POKE 9420, 173 (Unlimited lives)
POKE 4630, no of lives
POKE 4663, start level
POKE 4955, 252: POKE 5017, 252 (Invulnerability)
POKE 6689, 173 (Unlimited time)
POKE 4965, [no of diamonds to finish level]
SYS 11619 (To restart the game)

ROBOCOP (C64)

Robert also delves into the world of canned violence. Again you must use a reset switch.

POKE 44416, 0 (Unlimited energy)
SYS 32768 (To restart)

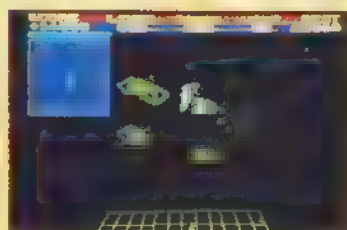


• There's no rust on Robert Troughton.

VIRUS (Spectrum)

The Tefal Men have sent us this poke for this absolutely dire game. Type it and run it before loading the game, for infinite everything (it would also be a good idea to save it for future use).

10 REM VIRUS INF LIVES FUEL + BOMBS
20 REM THE TEFAL MEN (C) MEL +



• A virus that won't go away.

```

STE
30 FOR f=40192 TO 40448
40 POKE f, 158: NEXT f
50 LET t=0
60 FOR f=40599 TO 40659
70 READ a: POKE f, a
80 LET t=t+a
90 NEXT f
100 IF t<>8930 THEN PRINT "ERROR
    IN DATA": STOP
110 PRINT AT 10, 1: "START VIRUS
    TAPE FROM BEGINNING"
120 DATA 62, 157, 237, 71, 237, 94
130 DATA 201, 229, 213, 197, 245
140 DATA 175, 50, 18, 252, 58, 160
150 DATA 252, 254, 195, 32, 18, 33
160 DATA 197, 158, 17, 160, 252, 1
170 DATA 15, 0, 237, 176, 62, 63
180 DATA 237, 71, 237, 86, 243, 241
190 DATA 193, 209, 225, 255, 201
200 DATA 62, 58, 50, 143, 175
210 DATA 175, 50, 203, 147
220 DATA 50, 123, 186, 195, 184, 153
230 RANDOMIZE USR 40599
240 LOAD "RANDOMIZE"
  
```

And finally we part on a sad note. It has been brought to my attention that the *Operation Wolf* poke for the Amiga, printed in the last CIA (two weeks ago), failed to work. Not only that, but it has previously appeared in another publication, errors and all. This is obviously not what we want here at Popular, so the money awarded to the sender of that particular poke has been withdrawn.

Please remember that ■ hints, tips, etc. submitted MUST be original, and should be sent to: RICHARD HENDERSON, CIA, COMPUTER GAMESWEEK, FOCUS MAGAZINES, GREENCOAT HOUSE, FRANCIS STREET, LONDON SW1P 1DG.

With that moan, I almost forgot something. Tipster of the Week is Howard Williams, for his *Dragon Ninja* cheats. Now that CIA is fortnightly, I suppose I'll catch up with you in two weeks time.

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Popular Computing Weekly ST Hard Disc Competition Entry Form

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(ii) Magnetically ☐

(iii) Magically ☐

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(ii) Cathode ray tubes ☐

(iii) Transistors ☐

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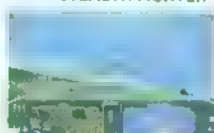
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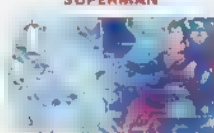
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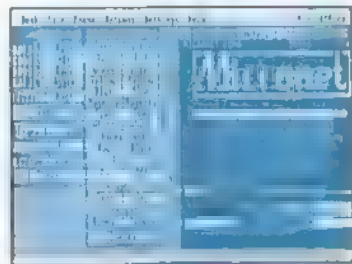
Matching suite

Adrian Pumphrey reviews the first two releases from the five packages comprising the ST version of Mini Office.

The award-winning Mini Office package is now available on the ST. Unlike the 8-bit version the package is in five separate parts - spreadsheet, communications, presentation graphics, database, and document processor, each package retailing for £24.95 with the exception of the document processor which retails at £34.95.

The first two packages to be released are the spreadsheet and the communications software.

Mini Office Communications offers a wide range of facilities for both viewdata and terminal emulation from 300/300 baud rates to 9,600. A phone list can be created which contains the numbers and commu-



Communicating in medium resolution Viewdata mode.

nications protocol needed to log onto a system. It is also possible to use a log-on file which enters the codes automatically, such as passwords, needed to log on to a system. If you have an auto-dialling modem the dial option can be used to select the system you wish to access and the software will handle the connection and log-on sequences. If your modem does not support auto-dialling the settings can be loaded into memory for the system you require before you attempt to log-on manually.

The package allows you to create a log which will record all activity for later perusal. It is also possible to save frames when in viewdata mode and then convert them into ASCII files. By far the most useful feature of this package is the fact that you can change the protocol settings, even switching between terminal and viewdata emulations, while on-line without losing the connection.

This feature is most evident in viewdata mode where the program allows the user to switch between low and medium resolutions at the touch of a button. In low



Mini Office accessories: disc utilities.

resolution you see the screen displayed in colour but in medium resolution it is black and white but you have access to the drop-down menus and two on screen tablets which are used to send commands through the modem, thus enhancing ease of use.

A thorough package which does everything except redial engaged numbers and allow a terminal greater than 76.

Mini Office Spreadsheet offers a wide range of commands with auto-recalculate

and index-based sorting. Full configuration of cell size and type is possible, including a function which allows a string of text to overflow to other cells while still remaining a product of the originating cell. This allows long headings to be placed on the spreadsheet without altering the cell size. Data in a cell can be either a formula, text or numeric. Important data can be locked to prevent accidental alteration.

A full range of block commands allows



Store your numbers in the phone book.

data to be copied either from one cell or block to another. When this involves the movement of formulae as they are adjusted automatically to allow for their displacement. Executable files can be created and run which will allow you to create and manipulate a spreadsheet from within program control. The commands used allow cells to be named for the program to perform jumps without the need for the user to remember cell numbers.

A comprehensive spreadsheet is fully GEM supported. My only dissatisfaction with this program is the time taken for to move from one cell to another.

With each of the packages there is a utility disc. It contains four desk-top accessories, a set of printer configurations and a utility for designing your own printer configuration files.

The accessories are a calculator - including everything from memory functions to hexadecimal calculations; a text editor - a



Making the grades with the spreadsheet.

reasonably sophisticated word processor memo pad - on-line notation at your beck and call; disc utilities - nine functions which allow you to organise and format your discs.

As stand-alone packages there is much to recommend these programs in their case of use power but the real advantage of these and subsequent Mini Office packages is their compatibility, as data from the database can be transferred to the presentation graphics package and the Spreadsheet and so on.

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The long arm of the law

Should there be greater legislative control of on-line systems? Malcolm Arnold thinks it may have troubling implications...

In the wake of my article on hacking, I have received some useful feedback via MBX. Mike Fellows wrote to say that although he saw the difficulties posed by hackers, he thought "the intended law to make even an attempted hack into a system, even if it fails, illegal, slightly out of order. I think priorities should be put into place."

Dave Spink contacted me to ask about the position of the press in highlighting what might be seen as damaging influences in comms. I have always interpreted the journalistic position as being one which presents information and opinion in such a way as to generate and contribute to informed and balanced debate of issues.

If the controversial provokes discussion, its presence can be very positive, though that does not excuse press shock tactics when faced with such an 'attractive' and esoteric subject.

I know certain respected comms stalwarts and luminaries who have been very upset by certain quality papers refusing to present the constructive side of the BB scene as balance to their dramatic coverage of what might be seen as the minority.

Recent press reports that BBs may contain questionable content, and that hackers can cause damage in systems carrying sensitive data, will probably produce a deluge of calls for some kind of licensing of private comms capability. Should sysops be compelled to register? Should modems be licensed like television and radio sets? Should there be legislation against hacking?

A spokesperson at OFTEL told me it did not envisage a situation where British Telecom would be able to license BBs. Telecom is under a universal obligation to provide telephone lines to all. That is to prevent any commercially partisan approach. In the case of the recent chatline controversy, BT is being advised by the Independent Committee for the Supervision of Standards in Telephone Information Services.

ICSSTIS has no comms capability, so far as I am aware. Perhaps one answer would be to have a group like it set up to monitor on-line computer services. Apart from the tangled web we weave when considering the question of censorship *per se*, the idea of Telecom, or the Government, licensing boards - and therefore having the power to



pull the plug on services making unfashionable political or sociological points - is somewhat chilling.

As for making hacking illegal, what would that achieve? Any destructive or criminal results of the activity are illegal anyway - fraud, destruction of data. The computer criminals, and those who would make use of hackers to wage commercial or political war, would place themselves beyond the law already. They will not stop because of a new law aimed specifically at them, will they?

Thanks to Elliot Ness for letting me know about the Bitmap Brothers BBS - 0245 413728 - V21/23 - 24hrs. Mike Montgomery of the Bitmap Brothers software concern is the sysop of this BB but Ness inputs much of the board's content as co-sysop and he assures me that the board is completely



Log-on to the Bitmap Brothers' BBS and join the Hot Hands Club.

non-commercial.

The BB claims 200 users and almost 2,000 calls to date. It has sections for Amiga, PC and ST and also provides the Unofficial Kylie Minogue Fan Club and a section glorying in the name of the Hot Hands Club.

The latter is a SIG for swapping information on arcade and computer games, offering the Golden Joystick Award for the game of the month, an archive of games reviews and a newsletter. The BB also has the Trade Wars on-line game.

The Village Fayre - 01-669 1552 - Viewdata - 24hrs - carries the theme of its title through every aspect of the BB. At log-on you are asked to 'give Bob your password' for a 'free ride on the big wheel', and all the graphical elements of the board duplicate scenes from such a fayre.

The BB has 11 registered users and runs Qview - see the Atavachron review, November 10-16 - on a QL with a good deal of extra storage and an Astracom modem. The areas on the board are listed as Sideshows, including Ghost Train, Gipsy Tent, Bulgarian's Books and so on. I stepped into the Beer Tent, where I was able to drink an article describing the 21 types of beer available in the U.K. in loving detail. The Fayre is a painstakingly-crafted concept BB which is well worth a look.

Falcon BBS - 01-627 4165 - V21/23 - 24hrs - runs FoReM on an Atari ST. The BB opens with an impressive logo for a scrolling board, spelling the board's name in 3D lettering. Its specialism is multi-user games.

There is a general MUG players' SIG called Muggers' Domain, and a SIG for Shades players. There are also two on-line games, *Space Trader Elite* and *FoReM Wrestling*. The board was launched and continued for its first three weeks on an Amstrad CPC using software designed by Steve, the sysop.

The ST set-up has been available for only six weeks, so the BB is very new, but well-supported by MUG players. Steve says: "If you play MUGs and need help or just fancy catching up on the news, this is the place. No self-respecting MUGger would be seen dead on any other system."

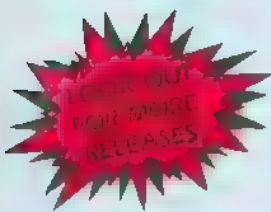
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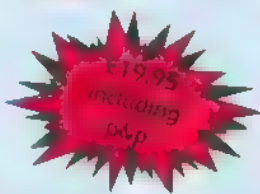
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Screen shots from Amiga Version

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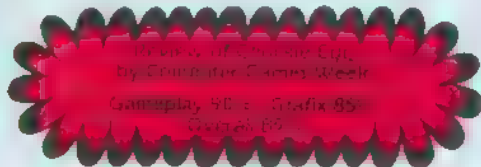
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C64 video control

Stuart Simpson of Harringay, London, writes:

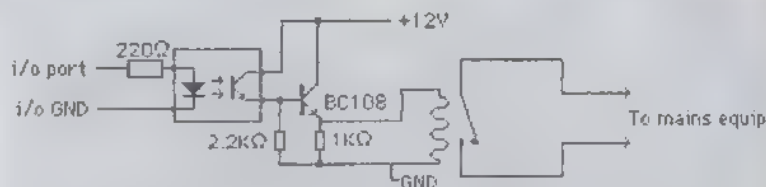
I have a rather old video recorder which does not allow more than one program to be pre-recorded at a time. I should like to use my Commodore 64 to interface to it to allow me to select a number of on and off times and even change channels. Could you describe an easy way to do this or will it be very difficult?

Probably the easiest way to record a number of programs in advance on a single tape is to obtain a mains timer switch. A seven-day version is available from Maplin Electronic Supplies - 0702 554161. All you need to do is plug the video recorder into this and pre-set the on/off times. The recorder will then go on and off at the selected times. The disadvantage with this is that it may not be very accurate, although you might get a better switch.

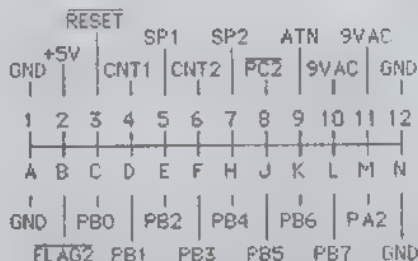
Using your computer will give the flexibility and accuracy required and using the C64 user port is easy. The way which you turn the recorder on and off is a little more complicated. You can use the computer either to drive a mains relay which turns the machine on and off or you can go inside the recorder and find the timer system, if it has one, and tap into it. Changing channels will have to be done in the same way and using electronic analogue switches is probably the best method. They can be attached across the channel selection switches inside the video recorder.

As with all systems which operate with mains-powered equipment, great care should be taken to make sure that no live mains cables can make contact with the lower-powered computer cables. At best, this can ruin the computer and, at worst, it could ruin you.

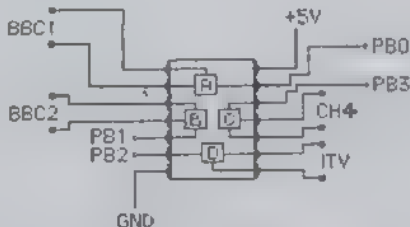
The user port on the C64 is bi-directional, i.e., signals can come in or go out, depending on the setting of Data Direction Register at 56579. A 0 in any bit position defines the corresponding bit of the port to be input, a 1 makes it output. The port is at 56577 and peeking this address gives inputs; poking it sets outputs, depending on DDRB. For example POKE 56579,255 and then POKE 56577,3 sets bits 0 and 1 of the port to 1 and bits 2 to 7 to 0.



Using an opto-isolator and transistor to drive a mains relay



The Commodore 64's User Port



Possible wiring on an analogue switch (4066BE) to change channels

The outputs on the port give +5V for a 1 and 0V for a 0 and those voltages can be used to drive either a relay via an opto-isolator and a transistor - see diagrams - or directly to drive an analogue

switch. If you have no experience with interfacing computers it is wise to experiment a little with the circuits shown. Obtain an electronics catalogue, say the Maplin catalogue, as it will list the various

integrated circuits available and describe what they do, sometimes with example circuits. Once you have a good idea how everything works, you can attempt to hook your computer to the real world.

ST drive fault

C.P. Rolfs of Crosby, Liverpool, writes:

I bought an Atari 520 STFM on May 17, 1988, the summer pack with the 1MB disc drive. When I first used it, one disc would not load and it was changed, told, there was a fault with the disc.

I then bought a copy of STAC and it also refused to load within a few days of purchase. That disc was changed as well.

Since then I have had eight discs which refuse to load and have sent them back to where I bought them and have been told there is nothing wrong with the discs or the disc sectors. The disc drive refused to believe there is a disc in the drive and displays the following alert box see below.

Could you explain why this alert box appears when there is a disc in the drive and refuses to load programs?

I have also noticed that the fault occurs mainly after the computer has been on for some time. After a few discs displayed the alert message I took them to a friend and they worked satisfactorily on his Atari 520STFM.

Also I have been using two programs which use random access filing and I am finding that after running the programs two or three times I get the same alert box.

I would say there is something wrong with the disc drive - not the discs. By the sound of it, the problem is more than one of alignment. If the drive head is not positioning properly the computer will think that there is something wrong with the disc. Most alignment problems are reasonably easy to fix by adjusting the position of the head; if you are experiencing problems with discs formatted on your computer, the problem is a little more serious and you will probably have to replace the drive. If the head is aligned in a set way, it will format discs and read them in the same set way.

Assuming you have a year's guarantee on the machine, you should take it back where you bought it and ask for a replacement. If the guarantee has expired, look through the small advertisements or even the Yellow Pages to find a repair shop to fix it for you.

Drive A: is not responding. Please check the disc drive and insert a disc. If it is a hard disc, check its connections.

CANCEL RETRY
Alert box given by the ST

ST cables and drives

N.R. Norton of Tamworth, Staffs, writes:

Concerning Goodwin's letter in the March 2 issue, I had the same problem of connecting an Atari ST to an Amstrad GTM 644 colour monitor. Not being an electronics wizard, my problem was solved by Lightwave Leisure, PO Box 23, Wallasey, Merseyside L44 1EW. Tel: 061 639 5050. I supplied the necessary cable and although there were problems with the first cable, the staff assisted and my ST-to-GTM 644 system has been working perfectly for almost a year. The cable is MVDC-074 and costs \$9.95.

As for the quality of the display, I

find that the picture produced by the ST is markedly clearer and steadier than that produced by my Amstrad CPC6128, especially when comparing the Amstrad 80-column mode to the Atari medium-res mode.

I am considering changing my half-megabyte internal drive to a full 1MB drive. Would it be possible to use the half-megabyte drive as a second drive using the 12V DC output from the GTM monitor as a power supply?

Thank you for the information about the cable. I cannot see why you should not use the 12V DC supply from the monitor since it is used to power the CPC6128 internal drive, which should have similar power requirements.

Flashy ST

Stewart Burdon of Darlington, writes:

Recently I bought an Atari 520STFM. The problem I wish to relate concerns some corruption which appears on the screen of the TV set used as a monitor. The programs run satisfactorily but the corruption appears as random flashing pixels on the screen.

When a word processor or text is installed, the flashes appear as random areas of shimmering at different locations on the screen. Sometimes switching off and on appears to solve the problems.

The machine has been returned to the place I purchased for inspection and repair on three occasions but the fault remains the same - I have had the computer for only three months.

I have tried the discs on a similar 520ST at a local shop and there does

not appear to be any fault on them. Could you advise on the possible cause of the problems?

Also could you advise on linking a Ferguson MM02 green screen monitor to the Atari 520STFM?

If your ST has been inspected and tested with a TV it should be satisfactory. It is possible that your TV is at fault and it may be something to do with tuning it to the ST modulator frequency. If you use the ST with a monitor the problem should not occur. There is a modification made to the aerial inputs of most modern TVs which allows them to tune to a video recorder more accurately. It may be that this change, or lack of it, is the problem - have a TV repair man check it. It may be that you are expecting the picture to be better than a TV is capable of; without seeing the fault in action, it is difficult to tell.

Unfortunately, I know nothing about the MM02 monitor but, if it is, as you say, a green screen monitor it should take a composite video signal. The ST puts this out on its video socket on pin 2. Without the specifications for the MM02, I cannot tell you how to wire it. You should be able to figure this from the monitor manual and the ST video socket composite video connection.

ST Video Socket



ST video socket composite video connection.

ST assembler

Kambiz Memarzai of Leeds, West Yorkshire, writes:

I am an Atari 520ST owner. I have had the machine for almost a year and I would like help to find a suitable language. I used to pro-

gram with Spectrum Assembler and I already have STOS, which I find to be good. The problem is that it is not so fast as assembler; after all, it is a Basic. I am ready to pay around £50 for a good language to program games and serious software. Could you give me the name of a package and where I can obtain it?

Monitor with VCR

G. Mawby of Brownover, Rugby, writes:

How can I adapt my colour monitor, as used with the Amstrad 464, to show films from a VCR? I do not possess a TV set nor do I wish to.

Most video cassette recorders put out signals in composite video form. The monitor used with the Amstrad CPC464 takes RGB, i.e., separate signals for red, green and blue plus synchronisation. Composite video is a coded form of RGB which can be sent down a single cable. The problem is that the two are incompatible. It may be possible to modify the VCR so that it puts out RGB but that would require some expert help.

The package you need is an assembler and the best one for the ST is Devpac ST version 2 from HiSoft. This is a complete macro assembler, monitor, debugger, and normally costs around £60. I have seen it available for \$45.50 from Clik, tel: 0753 683965, which is a good price.

Address file - Psion Organiser II

James Willsher



The Psion Organiser is useful and one of its capabilities is handling files in any way required. To use that facility to its full the programming language has to be entered, a daunting prospect for many users.

I have written a series of routines which will hold the names and addresses of people but they could be re-written for a different purpose. The main reason the program was written in a series of small routines as opposed to one large one is because it makes the program easier to understand, as each program deals with one function. It is also easier to trap errors and a user becomes more competent in programming, perhaps he could modify the routines to suit his needs or even write a new one.

The only requirement for the program to work is a Psion Organiser II. It was written on a 16K Organiser but, because all the routines are short, it should run on a model CM - a datapack may be needed. If a user require the programs can be changed to suit his needs by changing the prompts in AADD, ADDRESS and AEDIT. Also some of the file-variables may need altering. They all start with 'B'.

The program supports the Psion Commlink; APRINT may be omitted and the menu in ADDRESS should be changed if this is not available.

The programs are very user-friendly and have full error-trapping. Note that when entering a record a null string (" ") returns control to the main menu. ON/CLEAR, while on the main menu, exits the program. When entering the programs, do not type in the ONERR statements; if an error occurs the Organiser may be stuck in an endless loop.

```
ADDRESS:
GLOBAL CO,DEV$(1),F$(15),I$,M$,NAM$(10),OK,OK$(3)
ONERR A::
A:: :CLS :M$=MENU("RAM,PCK-B,PCK-C")
IF M$<1 OR M$>3 :RETURN :ENDIF
I$=M$+64 :NAM$=CHR$(I$)+" :ADDRESS"
IF EXIST(CHR$(I$)+" :MAIN") :GOTO W:: :ELSE GOTO A:: :ENDIF
W::
IF EXIST(NAM$)
OPEN NAM$,B$,SN$,FN$,HO$,RD$,VI$,TN$,CT$,PC$,PN$
ELSE CLS :PRINT "CAUTION-NO FILE"
PRINT "SET UP ON " :CHR$(I$);CHR$(63)
AT 13,2 :INPUT OK$
IF OK$="YES" :CREATE NAM$,B$,SN$,FN$,HO$,RD$,VI$,TN$,
CT$,PC$,PN$ ELSE GOTO A::
ENDIF
ENDIF
MEN::
ONERR MEN::
M$=MENU("ADD,FIND,CURRENT,EDIT,ERASE,PRINT")
CO=COUNT :IF M$=1 :AADD:
ELSEIF M$=2 :IF CO=0 :AFIND: :ENDIF
ELSEIF M$=3 :IF CO=0 :ACURR: :ENDIF
ELSEIF M$=4 :IF CO=0 :AEDIT: :ENDIF
ELSEIF M$=5 :IF CO=0 :AERASE: :ENDIF
ELSEIF M$=6 :IF CO=0 :APRINT: :ENDIF
ELSE CLOSE :RETURN
ENDIF :GOTO MEN::
```

```
AADD:
REM ONERR M:: :B$.SN$="" :B$.FN$="" :B$.HO$=""
:B$.RD$="" :B$.VI$="" :B$.TN$="" :B$.CT$
="" :B$.PC$="" :B$.PN$=""
CLS :PRINT "SURNAME>":INPUT B$.SN$
IF B$.SN$="" :RETURN :ENDIF
CLS :PRINT "FORENAME(S)>":INPUT B$.FN$
IF B$.FN$="" :RETURN :ENDIF
CLS :PRINT "HOUSE>":INPUT B$.HO$
IF B$.HO$="" :RETURN :ENDIF
CLS :PRINT "ROAD>":INPUT B$.RD$
IF B$.RD$="" :RETURN :ENDIF
CLS :PRINT "VILLAGE>":INPUT B$.VI$
IF B$.VI$="" :RETURN :ENDIF
CLS :PRINT "TOWN>":INPUT B$.TN$
IF B$.TN$="" :RETURN :ENDIF
CLS :PRINT "CITY/COUNTY>":INPUT B$.CT$
IF B$.CT$="" :RETURN :ENDIF
CLS :PRINT "POSTCODE>":INPUT B$.PC$
IF B$.PC$="" :RETURN :ENDIF
CLS :PRINT "PHONE>":KSTAT 3 :INPUT B$.PN$ :KSTAT 1
IF B$.PN$="" :RETURN :ENDIF
IF LEN(B$.SN$)+LEN(B$.FN$)+LEN(B$.HO$)+LEN(B$.RD$)
+LEN(B$.VI$)+LEN(B$.TN$)+LEN(B$.CT$)
+LEN(B$.PC$)+LEN(B$.PN$)>254 :GOTO P:: :ENDIF
APPEND :FIRST :RETURN
P:: :CLS :PRINT "SORRY, TOO BIG" :BEEP 100,100 :GET :AADD:

AFIND:
CLS :PRINT "FIND>":INPUT F$
B:: :FIRST
WHILE FIND(F$) :I$=DISP(-1,"") :IF I$=1 :RETURN :ENDIF :NEXT
ENDWH
CLS :PRINT "NO MORE RECORDS":CHR$(33) :DEV$=GET$
IF ASC(DEV$)=1 :FIRST :RETURN :ENDIF
FIRST :GOTO B::

ACURR:
WHILE DISP(-1,"")<1 :ENDWH :RETURN

AEDIT:
C:: :ONERR Q:: :M$=MENU("SURNAME,FORENAME,HOUSE,ROAD,
VILL.,TOWN,CITY/COUNTY,PCOD
E,PHONE,SAVE")
IF M$=1 :EDIT B$.SN$
ELSEIF M$=2 :EDIT B$.FN$
ELSEIF M$=3 :EDIT B$.HO$
```

CONTINUES ►

```

ELSEIF MX=4 :EDIT B.RD$
ELSEIF MX=5 :EDIT B.VI$
ELSEIF MX=6 :EDIT B.TN$
ELSEIF MX=7 :EDIT B.CT$
ELSEIF MX=8 :EDIT B.PC$
ELSEIF MX=9 :KSTAT 3 :EDIT B.PN$ :KSTAT 1
ELSEIF MX=10 :UPDATE :FIRST :RETURN
ELSE FIRST :RETURN :ENDIF :GOTO C::
Q:: :CLS :PRINT " SORRY, TOO BIG" :BEEP 100,100 :GET :GOTO C::

AERASE:
CLS :PRINT "ERASE Y/N"
IX=VIEW(2,(B.SN$+" ", "+B.FN$))
IF IX=89 :ERASE :ENDIF :FIRST :RETURN

APRINT:
CLS :PRINT "PRINT Y/N"
IX=VIEW(2,(B.SN$+" ", "+B.FN$))
IF IX=88
  LPRINT B.SN$+" ", "+B.FN$
  LPRINT B.HO$+" ", "+B.RD$
  LPRINT B.VI$
  LPRINT B.TN$
  LPRINT B.CT$
  LPRINT B.PC$
  LPRINT B.PN$
ENDIF
RETURN

```

Snowflakes - Spectrum

John Exell

Snowflakes abound as this program gets into the generation game. As the program runs you will see a selection of eight patterns, each forming its own exceptional flake.

```
10 LET S = 2
```

```

30 FOR C = -1 TO 1 STEP 2
40 FOR D = -1 TO 1 STEP 2
50 FOR E = -1 TO 1 STEP 2
60 PLOT 65,5
70 LET A = P1/2
80 GOSUB 160
90 GOSUB 530
100 PAUSE 200: REM : INSERT
    PRINT PROGRAM HERE.
110 CLS
120 NEXT E
130 NEXT D
140 NEXT C
150 STOP
160 FOR N = 1 TO 3
170 GOSUB 210
180 LET A = A-2*P1/3
190 NEXT N
200 RETURN
210 GOSUB 290
220 LET A = A-P1/3
230 GOSUB 290
240 LET A = A+2*P1/3
250 GOSUB 290
260 LET A = A-P1/3

```

```

270 GOSUB 290
280 RETURN
290 GOSUB 370
300 LET A = A+P1*C/3
310 GOSUB 370
320 LET A = A-2*P1*C/3
330 GOSUB 370
340 LET A = A+P1*C/3
350 GOSUB 370
360 RETURN
370 GOSUB 450
380 LET A = A+P1*D/3
390 GOSUB 450
400 LET A = A-2*P1*D/3
410 GOSUB 450
420 LET A = A+P1*D/3
430 GOSUB 450
440 RETURN
450 DRAW S*COS A, S*SIN A
460 LET A = A+P1*E/3
470 DRAW S*COS A, S*SIN A
480 LET A = A-2*P1*E/3
490 DRAW S*COS A, S*SIN A
500 LET A = A+P1*E/3
510 DRAW S*COS A, S*SIN A
520 RETURN
530 PAUSE 100
540 PLOT 173,5: REM THIS
    PRINT MAY BE DIFFERENT
    FOR EACH MAKE OF
    COMPUTER. FIND BY TRAIL
    AND ERROR ON X-AXIS.
550 LET A = 5*P1/6
560 GOSUB 160
570 RETURN

```


The Data Protection Act came into force on November 11, 1987. It was introduced in answer to media pressure about the power of the micro and the potential of its data handling capability. Television programmes suggested that anyone armed with a reasonably specified home computer could use it to take on the world and win. The abuses were endless, from simple blackmail by putting together seemingly uninteresting trivia to make a picture, to complex mailing systems to produce customers willing to be duped by mail order. Political data could be used to swing the result of elections, or people's personal details could be correlated to set up fraudulent and highly-lucrative religious sects.

That kind of science fantasy soon had politicians worried. Few were aware that to get a computer to perform even a simple task a great deal of study and effort is needed.

Although the power in terms of random access memory and processing speed of micros will approach and equal that of mainframes only a few years older, to run serious data processing large and expensive peripherals will always be needed.

It would not be possible to issue the entire country's car tax discs on one £100 printer. If it were, why is the DVLC in a huge office block? It is not possible for one person to type in all the data - many terminals are needed.

People's fears about the power of data are usually based on power held by the authorities, not the average home computer user running some amateur newsletter with a few tens of subscribers, or small mail order

Data protection racket?

business with a few hundred customers. Yet all such data users have to register.

Initially the fee was £22 for three years. In addition, data users could charge anyone asking for their particulars - "data subjects" - £10 a time, so if three people enquired in a three-year period they would be into profit. On the face of it, it looked an eminently sensible system. Things have worked out rather differently. Most people are worried about data held by the authorities and much such data is exempt from the Act. Attempts have been made to include various authoritarian databanks and they are meeting fierce opposition.

More than 165,000 applications for registration had been received by the Government under the Data Protection Act by October, 1988, the result of fear of prosecution and fines into thousands of pounds. By October, 1988 there had been four prosecutions and fines of up to £700 were imposed. Two search warrants have been applied for and executed.

The Data Protection Registrar has received complaints at a rate of 1,300-1,400 per year. At present, during the period when people are getting used to the Act, most complaints are dealt with outside the courts.

The real claim to replace the word "Act" with "racket" comes from the registration fee structure. When it started the fee was

£22. In November, 1987 it was increased to £40 and in January, 1989 it was increased again to £56. There is no feedback between data user and the fee. He cannot withdraw except by closing his business or ceasing to use his microprocessor for data handling. Neither is there feedback about how many people use the system to check their personal data and its costs. An interesting corollary is that it would appear that if one were to keep a highly contentious database, and advertise the fact, one could have a very good "racket" sending £10 printouts to all and sundry worried about the accuracy of their entries.

If the public really needs such a system it should pay for it. I would propose that there should be no fee for registering but that all requests for data should be forwarded to the Registrar, not the data user, together with the £10. The Registrar could then send the data user the request, together with reply-paid mailing materials, and the data user could provide the data in the mailing material for either no fee or a substantially lower fee, say 50 pence.

The Registrar would then keep the £10 - or possibly £9.50 - for the running of the service. If the service could not pay its way on that basis, one would question whether it is really needed.

Meanwhile, anyone worried about whether they should register should contact the Data Protection Registrar, Springfield House, Water Lane, Wilmslow, Cheshire SK9 5AX, who will provide a set of booklets.

John de Rivaz

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